DOCUMENT RESUME

ED 238 895	TM 830 717
AUTHOR	Lockheed, Marlaine E.; And Others
TITLE	Computer Literacy: Definition and Survey Items for Assessment in Schools.
INSTITUTION	Educational Testing Service, Princeton, N.J.; Human Resources Research Organization, Alexandria, Va.; Instructional Computing, Inc., Minneapolis, MN.
SPONS AGENCY	National Center for Education Statistics (ED), Washington, DC.
PUB DATE	Sep 83
CONTRACT	400-82-0024
NOTE	222p.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC09 Plus Postage.
DESCRIPTORS	*Computer Literacy; Curriculum Development; *Data Collection; Elementary School Students; Elementary School Teachers; Elementary Secondary Education; Glossaries; *Item Banks; *Needs Assessment; Principals; *School Surveys; Secondary School Students; Secondary School Teachers; Superintendents; Test Items; Test Validity

ABSTRACT

This project presents a pool of questions that can be used in surveys to provide data that would enable state and local education agencies, school administrators, teachers, parents, and the computer industry to make better informed decisions regarding: (1) curriculum planning and implementation in elementary and secondary school; (2) design of inservice and preservice training programs for teachers and administrators; (3) development of educational computer equipment, software, and computer-related learning materials; and (4) evaluation and selection of computer equipment, software, and learning materials. The pool of questions contain three different types. The first type is the survey item that asks the respondent about his or her computer-related knowledge, skills, experience, and use. The second type is the validation item whose purpose is to objectively validate the survey items. The third type is the inventory item that seeks information regarding computer-related resources in the district, school, or classroom. The included items are addressed to four types of respondents: school district superintendents (n=245), principals (n=377), teachers (n=284), and students (n=204) of elementary and secondary schools.(PN)

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ED238895

Computer Literacy: Definition and Survey Items for Assessment in Schools

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September 1983

Prepared for the National Center for Education Statistics under contract 400-82-0024 with the U.S. Department of Education. Contractors undertaking such projects are encouraged to express freely their professional judgment. This report, therefore, does not necessarily represent positions or policies of the Government, and no official endorsement should be inferred. This report is released as received from the contractor.

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Acknowledgments

We gratefully acknowledge the contributions of: Dr. Kathleen Gerritz (ETS), Dr. Margaret Goertz (ETS), Dr. Robert Seidel (HumRRO), Dr. Susan Thomas (Florida State University), Dr. Michael Zieky (ETS), Ms. Bernedette Dunmeyer (ETS), Ms. Elaine Guennel (ETS), Ms. Lorraine Luciano (ETS), Mr. Kenneth Rosenblad (Teachers College), Ms. Doris Stein (HumRRO), Ms. Wallie Walker (ETS), and Ms. Susan Wilson (ETS), who assisted in various phases of this project.

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Introduction

American education is being confronted by profound technological changes occurring in the larger society. These changes are generally referred to as the "information revolution"--a revolution characterized by rapid developments and reduced costs in electronic information technologies and global information networks. The most immediate consequence of this revolution for education has been the introduction of low-cost microcomputers into elementary and secondary schools throughout the nation. From fall 1980 to spring 1982 the number of microcomputers available for instructional use by public school students tripled; 22% of elementary schools and 60% of secondary schools reported having microcomputers (Wright, 1982). With the increasing capability of microcomputers and their declining costs, it is not unreasonable to anticipate a time not far in the future when all elementary and secondary students will have access to a computer on a regular basis.

The potential that computers hold for education is dramatic. Properly programmed, computers can facilitate the teaching and learning process, can be used as tools in most subject matter areas, and can be used for administrative purposes. As an object of study, computers can prepare students for a wide variety of new careers in technology (Office of Technology Assessment, 1982).

Despite the potential utility of computers for education, and the apparent speed with which schools have acquired computers, detailed information regarding computer applications in elementary and secondary schooling is presently limited. Recognizing this deficiency, and in support of

Secretary Bell's initiative on educational technology, the National Center for Education Statistics (NCES) and the Education Technology and Science Staff (ETSS) of the Office of Educational Research and Improvement (OERI), initiated a project to facilitate the systematic gathering of data on computer use and computer literacy in elementary and secondary education. The purpose of this project was to develop a pool of questions that could be used in surveys to provide data that would enable state and local education agencies, school administrators, teachers, parents, and the computer industry to make better informed decisions regarding:

1. Curriculum planning and implementation in elementary and secondary schools;
2. Design of inservice and preservice training programs for teachers and administrators;
3. Development of educational computer equipment, software, and computer-related learning materials;
4. Evaluation and selection of computer equipment, software, and learning materials.

The Purpose of the Project

Although the number of schools that have computers and use them for student-related activities has risen dramatically in the past few years, little is known about who are using the computers and for what purposes they are being used. Recent surveys of computer-using teachers and schools indicate that the primary uses of computers in schools are for programming in BASIC, general "computer awareness courses" and for drill-and-practice applications (Becker & Fennessey, 1983; Anderson, 1983). Beyond such general types of knowledge, little is known about the specific uses of computers made by administrators, teachers, and students. Moreover, much of the data that have been gathered to date is structured so differently that little cumulative knowledge has been obtained. To solve these problems and help provide more comprehensive and more comparable information regarding the types of uses of computers and the extent of their application in schools, the Department of Education commissioned the preparation of a pool of questions that can be used to construct instruments with these objectives.

The pool of questions--referred to hereafter as "items"--include three different types. The first type of items is the survey item that asks the respondent about his or her computer-related knowledge, skills, experience, and use. The second type of item is the validation item whose purpose is to objectively validate the survey items. The third type of item is the inventory item that seeks information regarding computer-related resources in the district, school, or classroom.

The items themselves are addressed to four types of respondents:

- School district superintendents
- Elementary and secondary school principals
- Elementary and secondary school teachers
- Elementary and secondary school students

The pool of items can be used by federal, state, and local education agencies and researchers as a starting point in designing instruments for assessing the status of computer literacy in schools and school districts. The items themselves should be relevant to conditions that might prevail until 1990. Technological changes, of course, may affect the relevance of specific items.

The items are designed to assist in gathering information that would help to answer questions such as the following:

- To what extent have goals for computer literacy been formalized?
- In what ways are computers being integrated into curriculum areas?
- What is the quality and quantity of computer-related courses in the schools?
- To what extent and in what ways are superintendents, principals, teachers, and students computer-literate?
- What are superintendents, principals, teachers, and students doing with computers?
- At what grade levels are computers being introduced?
- How do superintendents, principals, teachers, and students keep up with computer-related developments and issues?
- How are equipment, software, and curricular materials being evaluated and selected?
- How accessible are appropriate computer equipment, software, and learning materials to administrators, teachers, and students?

- What are the policies on computer acquisition, access, and use?
- How are resources allocated within a district?
- What programming languages are being taught, and to whom?
- What computer-related training is being provided, for whom and by whom?
- How are schools evaluating their computing activities?
- Who makes decisions on such matters as curriculum, equipment selection, teacher training, software selection?
- Does the use of computers vary between different types of schools and communities?
- What are the relationships between computer activities in school and computer access outside of school?
- How are parents and communities involved?
- What resources are needed and lacking in order for schools to achieve their goals?

The nature and extent of computer-related activities is changing rapidly in schools and school districts, as well as in society at large. In designing the items, the assumption was made that surveys incorporating them would be conducted several times during the time frame 1985-1990, thus providing information on changes and trends.

How the Project Was Conducted

Organization

This project was the joint effort of Educational Testing Service (ETS) of Princeton, New Jersey, the Human Relations Research Organization (HumRRO) of Arlington, Virginia, and Instructional Computing, Inc. (ICI) of Minneapolis, Minnesota. ETS, the prime contractor, provided test and survey development expertise, and HumRRO and ICI brought to the project expertise in the area of computer use in education. The first activity of the project was to identify members of a ten-person Advisory Panel who would guide the project throughout its course.

The Advisory Panel was selected to include representatives from the following groups:

- elementary and secondary teachers
- administrators
- chief state school officers
- the computer industry
- publishers
- professional societies in computing
- post-secondary teachers of computer science

The Advisory Panel was also selected for regional representation, with members from the Far West, the Northwest, the Midwest, the South, and the Northeast. Members of the Advisory Panel hold doctorates in education, mathematics, engineering, physics and computer science, and all have been actively involved in computer-related educational activities. The Advisory Panel members were:

Dr. William Atchison
Professor, Department of
Computer Science
University of Maryland
College Park, Maryland

Dr. Joseph Caravella
Director of Professional Services
National Council of Teachers of
Mathematics
Reston, Virginia

Dr. Sylvia Charp
President, American Federation of
Information Processing Societies, and
Past Director of Instructional Systems
School District of Philadelphia
Philadelphia, Pennsylvania

Dr. K. Fred Daniel
Director, Strategy Planning
and Management Information Systems
Florida Department of Education
Tallahassee, Florida

Dr. Arthur W. Luehrmann
Computer Literacy, Inc.
Berkeley, California

Dr. J. Michael Moshell
Associate Professor, Computer
Science Department
University of Tennessee
Knoxville, Tennessee

Dr. David Moursund
Professor, Department of
Computer and Information Science
University of Oregon
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Minneapolis, Minnesota

Dr. Robert F. Tinker
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Cambridge, Massachusetts

Dr. Daniel H. Watt
Editor, Byte and Popular Computing
Peterborough, New Hampshire

Recent books on computer use in education written by members of the panel include Computer Literacy: A hands-on approach by A. W. Luehrman and H. Peckham (Webster Division, McGraw-Hill Book Company, 1983); Computer Power by J. M. Moshell (Gregg/McGraw-Hill, 1982); Calculators in the Classroom by D. Moursund (John Wiley & Sons, 1981); My Friend the Computer by J. M. Rice; and Learning with Logo by D. H. Watt (Byte Books/McGraw-Hill, 1983).

During the course of the project, the Advisory Panel convened three times for two-day meetings to review, revise and make recommendations regarding the definition and conceptual structure of computer literacy, the items as they were developed, and the various reports prepared during the course of the project. Their substantive input was essential to the functioning of the project.

Project Procedure

The study included four major activities: defining computer literacy, developing a conceptual structure for computer literacy in elementary and secondary education, writing items to survey and assess computer literacy, and field testing the items. Each of these activities is described in the following sections.

Defining Computer Literacy. Computer literacy is a term that has been widely discussed, but whose meaning has rarely been agreed upon. In order to adequately reflect the diversity of meaning attributed to "computer literacy," a review of previous definitions, computer literacy course outlines, curriculum guides, and general goals for computer literacy in schools was conducted. (See the Reference section of this report for citations of materials reviewed.)

Based on this earlier work, a draft definition of computer literacy was prepared, reviewed, and refined by the Advisory Panel. The final definition of computer literacy agreed upon by the Advisory Panel was:

> "Computer literacy may be defined as whatever a person needs to know and do with computers in order to function competently in our information-based society.
>
> Computer literacy includes three kinds of competence: skills, knowledge, and understanding. It includes:
>
> 1. the ability to use and instruct computers to aid in learning, solving problems, and managing information;

2. knowledge of functions, applications, capabilities, limitations, and social implications of computers and related technology; and

3. understanding needed to learn and evaluate new applications and social issues as they arise."

This definition highlights the fact that specific skills, knowledge and understanding will vary from person to person, from job to job, and from time to time. The term "computer literacy" does not, however, cover the specialized knowledge and skills that are required for careers in such computer-related fields as computer science, data processing, or systems engineering.

The definition of computer literacy used here incorporates the ideas inherent in the definitions of computer literacy proposed by others. For example, Ronald Anderson and Daniel Klassen (1982) defined computer literacy as:

> "Whatever understanding, skills and attitudes one needs to function effectively within a given social role that directly or indirectly involves computers."

David Moursund (1982) has proposed that:

> "Computer literacy is a working knowledge of computers."

Arthur Luehrmann (1982) has reasoned that:

> "If you can tell the computer how to do the things you want it to, you are computer literate."

The Layman's Guide to the Use of Computers in Education published by the Association for Educational Data Systems (Charp, et al., 1982) states that computer literacy

> "is being considered a basic skill and essential to function properly in our society. The ability to learn how to handle information, solve problems, communicate with people, and help understand the changes that are happening in our society can be aided with the proper use of the computer."

Because computers are simply tools for handling information and solving problems, some have argued that the idea of "computer literacy" should be replaced with "information handling literacy." Licklider (1982), for example, proposed national goals for "information technology know-how." Nevertheless, the phrase "computer literacy" has become a focus for information technology know-how; therefore, it is probably useful and convenient to retain the phrase in spite of its deficiencies.

Developing a Conceptual Structure. The development of a conceptual framework for computer literacy as it is applied to administrators, teachers, and students in elementary and secondary schools was shaped by a review of computer literacy course outlines, curriculum guides, and general goals for computer literacy. This framework distinguished seven domains of computer literacy skills and knowledge:

1. Administration

   Administering computer-related policies and procedures for a school district or school. Includes such tasks as establishing computer literacy goals for students; establishing procedures for evaluating software; and assigning responsibility for teacher training.

2. Teaching

   Teaching with or about computers. Includes such tasks as teaching students how to use computer software; discussing social issues with students; assessing students' computer-related skills.

3. Using Programs

   Using suitably programmed computers as aids in learning, managing information, and solving problems. Includes such tasks as operating equipment; selecting the appropriate program for a given purpose; using a graphics program to graph data from a science experiment; using a word processor to aid in writing and editing a composition.

4. Developing Programs

Developing procedures for solving a problem, and writing the procedures in a form the computer can understand and carry out. Includes such tasks as defining a problem; giving a sequence of commands and instructions to the computer; testing and debugging a computer program.

5. Analyzing Applications

Knowing capabilities and limitations of computers as they are used for various purposes. Includes such tasks as describing how people in the school district use computerized student records; deciding whether to use a computer to aid in a particular activity.

6. Social Issues

Understanding social issues related to computers and technology. Requires awareness of issues such as privacy, computer crime, job requirements, consumer concerns, sources and effects of "computer errors." Involves identification of issues and parties in conflict.

7. Concepts and Terms

Understanding of the fundamental concepts and terms related to computers, that are needed to use computers effectively and comfortably. Examples include understanding the concept of stored programs; recognizing common ways of processing data, such as methods of searching, sorting, summarizing, and updating.

The Advisory Panel rated the relative importance of the domains for school system administrators, elementary and secondary school principals, elementary and secondary school teachers, and elementary and secondary school students.

For each domain, brief descriptions of computer-related tasks ("task statements") that administrators, teachers, or students may need to be able to perform were developed. For example, one task statement for teachers was to "evaluate and select computer programs for your students to use." These task statements were derived from the materials reviewed, and overall, more than 250 task statements were prepared. The Advisory Panel also rated each task statement for its importance to each respondent group.

Writing Items. A preliminary set of specifications for item development was obtained from the list of 250 task statements generated as part of the conceptual framework, and from an independent review of previously developed instruments designed to assess the status of computer literacy. These instruments are cited in the references of this report. From these instruments and the draft task statements, draft versions of over 200 items were prepared.

A second set of specifications for item development was derived from a list of substantive questions raised by the Advisory Panel. These questions clarified the need to develop items to inventory computer-related equipment, software, training, curricular materials and other resources available to individuals, classrooms, schools, and school districts.

Three types of items were developed: (1) computer literacy self-survey items including (a) self-assessment items for which the individual reports his or her own level of knowledge or skill, (b) self-report items for which the individual describes his or her own behavior (e.g., frequency of using a computer), and (c) expert report items for which the individual serves as an informant (e.g., he or she indicates whether or not his or her district has policies related to computers); (2) computer literacy validation items, which are multiple-choice questions for each computer literacy domain; and (3) computer-related resource inventory questions. Computer literacy survey items and computer related resource inventory questions were developed as checklists, ratings, rankings, and simple "Yes-No" questions.

Preliminary versions of all items were reviewed, revised, and refined, over multiple iterations, by the project staff and the Advisory Panel. In developing and reviewing items, attention was directed toward the adequacy and accuracy of the content, format, style, and readability. In general, most items have a sixth-grade reading level, although many items contain some computer-related technical words that might not be familiar to the average sixth-grade student.

Field Testing. The purpose of the field test was to conduct a formative evaluation of the preliminary survey and validation questions. Although the questions had been developed through several iterations and reviews by technical experts, they had not been tried out with the superintendents, principals, teachers, and students who were to be the ultimate target group. The evaluation focused on the responses of individuals from each of these groups to the language and substance of the items.

Eight school districts in New Jersey, Pennsylvania, and Delaware participated in the field test. Individual interviews were conducted with the superintendent, a secondary and an elementary principal, and a secondary and an elementary teacher. Students were surveyed in groups of ten, each of whom responded to a different set of ten items; each item, however, was answered by only eight elementary students and eight secondary students.

The data from the field test were subjected to both qualitative and quantitative analysis; results of these analyses were used in the penultimate revision of the items.

The Item Pool and How to Use It

The last four sections of this report contain a pool of survey and resource inventory items that may be used in computer literacy surveys; the validation items are not included in order to maintain security. Individuals wishing to obtain copies of the validation items may do so by following the instructions on page 18.

Survey Items

The pool of survey and resource inventory items has been separated into four groups of questions appropriate for superintendents, principals, teachers, and students. The same or similar item may appear in more than one set of items, with similar forms adapted for particular respondents. For example, an item asking whether or not the respondent has ever written a computer program may appear identically worded in all four sets, whereas an item asking about computer-related policies may be worded differently, directing the superintendent to answer about district policies, the principal to answer about school policies and the teacher to answer about classroom policies. The Index of Items provides a listing of all items in the pool, and indicates which items appear in each of the four sets; asterisks indicate items containing parallel, respondent-specific wording.

Although the sets of items do not constitute finished survey instruments, the items are arranged in a logical order within sets. Items related to each domain are grouped together, and domains appear in the order listed above, beginning with "Administration" and ending with "Resource Inventory." The number of items appropriate for each type of respondent, by domain, are shown in Table 1. Many items are related in multi-part questions that would be administered as a unit. Multi-part questions are indicated in the Index as a range of items (e.g., 3-5).

Table 1: Item Pool of Computer Literacy Questions
Appropriate for Each Respondent Group, by Topic

	Respondents			
Survey Questions	Superintendent	Principal	Teacher	Student
Administration	59	83	26	1
Teaching	18	60	57	42
Using Programs	105	105	123	110
Developing Programs	6	6	14	14
Analyzing Applications	5	6	6	3
Social Issues	46	46	46	24
Concepts and Terms	5	5	10	10
Resource Inventory	4	66	2	0
Total	248	377	284	204

The item pool for each respondent group is much larger than any actual survey instrument should be. To use these items, a subset of items should be drawn and one or more instruments developed, as follows:

1. Select those questions from the appropriate pool that address the purposes of your survey. For example, you may wish to select some items from each of the survey, resource inventory, and validation type items. Within the survey items, you may wish to select some items from each domain or to limit the selection to one or more domains.

2. Determine how long you wish the survey to take. On the average, adults and secondary school students will answer four items per minute for up to 60 minutes; students in grades 4-8 answering at approximately the same rate can be surveyed for up to 30 minutes. Questions in matrix format will take longer to answer; each subpart should be counted as a question in determining the administration time.
3. Determine what demographic or identifying information you will need for the analysis and interpretation of results. This information might include such respondent characteristics as age, grade, gender, or ethnic identity, or such school or district characteristics as size or location.
4. Construct a draft survey instrument that includes the questions, any additional questions for obtaining the demographic or identifying information, a short introduction to orient the respondent to the survey, directions for answering the questions, and information regarding to whom and where the survey should be returned when the respondent has completed it.
5. The advantage of using items in this pool is that comparable data may be collected in multiple locations; changing the wording of specific items defeats this purpose. If wording changes are necessary, however, they should be made.
6. Pretest the instrument you have developed on a sample of your target population, and revise the instrument in accordance with the pretest results.

For detailed information on any of the preceding suggestions, consult references on test and survey instrument development.

Validation Items

Questions were developed for use by those wishing to validate the self-report questions in the survey. For example, if a respondent answered that he or she had written many computer programs in BASIC, then he or she should be able to correctly answer a question regarding the output of a simple BASIC program. For the field test, self-report items and validation items dealing with the same topic were administered to respondents. Of the 420 correlations between self-report and validation items that were computed, 31% were statistically significant at the .10 level--three times more than would be predicted by chance. Since the field test respondent sample was extremely small, the degree of correlation between the validation and self-report items may actually be underestimated.

In order to keep the validation items secure, and therefore of maximum use to researchers, they are not included in this package. They may be obtained by writing for:

1983 Computer Literacy Validation Items
National Center for Educational Statistics
Attention: Brown Building, Room 600
400 Maryland Avenue, SW.
Washington, DC 20202

A statement of nondisclosure must be agreed to before NCES releases the items.

The validation items do not constitute a test of the skills in any of the domains, and should not be regarded as an adequate measure of computer literacy. Their purpose should be only to validate specific self-report questions on the survey. The psychometric properties of these items are unknown, as the items have not been administered to a sizeable respondent group and statistics have not been computed for them.

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Glossary

access: Used either as a verb or noun to indicate either gaining control of a system or the acquistion of data from a storage device or peripheral unit.

advanced computer programming: Courses in which students are taught more advanced programming skills and solve more complex problems than in a beginner`s course. These might involve, for example, complex graphics or file design.

ALGOL: ALGOrithmic Language. A high level language by which numerical procedures may be precisely presented to a computer in a standard form.

algorithm: A defined process or set of rules that leads and assures development of a desired output from a given input. A sequence of formulas and/or algebraic/logical steps to calculate or determine a given task; processing rules.

analog: Representation of information by an output signal which varies in a continuous manner with respect to the input. Contrasted with digital representation of information.

APL: A high level programming language, often used in education and sometimess used in conjuction with statistical databases.

Apple DOS 3.3: A Disk Operating System for Apple computers.

application: Use of a computer for a particular purpose, as in an educational application.

application package: A program, or set of programs, designed to perform a particular application, or task (as in information retrieval, word processing, data analysis).

assembly language: A programming language in which each statement corresponds to a single machine language instruction. Normally written in some form of mnemonic code.

authoring language: A high-level computer programming language designed for use by authors or writers as distinguished from computer programmers. CAI programs are often written in an authoring language.

authoring language programs: Computer programs written in a high level language called an authoring language. Sometimes associated with computer-assisted instruction.

back-up copy (of program or file): A second copy of a file in machine-readable form, which allows a user to retain information in the event the original is lost or damaged.

BASIC: Beginner's All-purpose Symbolic Instruction Code. A high level programming language designed for ease of use. Particularly suitable for entering and running programs on-line. It is now a standard programming language, in a number of variant forms, for microcomputers.

basic computer hardware: The essential mechanical, magnetic, electronic and electrical devices which go to make up a computer.

bit: Acronym for binary digit. Represents the smallest unit of information (corresponding to, eg 0 or 1; `on' or `off'; `signal' or `no signal'). Computers store information as a series of bits.

board: See printed circuit board.

business programs: Computer programs used to assist in operating or managing a business. They involve such operations as file processing, data manipulations, reporting, procedures for operating or quality control, and project budgeting.

byte: A group of adjacent bits, usually 8 bits, operating as a unit; corresponds to one alphabetic character.

CAI (Computer-Assisted Instruction): Instruction in which the computer is used as a `teaching machine'. The computer presents instructional material, asks questions, evaluates student's progress, tailors instruction to the learner.

card: A card of standard size, thickness and shape used to input data and instructions into a computer.

card punch: A device which perforates cards in a specific location under the guidance either of a computer, or of a user at a keyboard. It is these perforations which give the computer instructions.

card reader: A device which permits the sensing of information punched on cards and converts this information into electronic messages.

cassette: A portable container for film or magnetic tape frequently used for loading programs or data into a computer.

cathode ray tube (CRT) An electronic display device, similar to a television picture tube, used to display information including graphics. Often referred to simply as a "display" or "video display."

CBI (Computer-Based Instruction): Same as CAI.

central processing unit (CPU): The "brains" of a computer. It carries out all the arithmetic, logic and control operations.

chip: A description of a single integrated circuit. It is usually in a package between 1 and 5cm in length, and having between 6 and 40 external connections. The type normally found in computer systems is called a logic chip.

CMI (Computer-Managed Instruction): Some application of computers to the management of instruction, such as testing, diagnosis of learning difficulties, keeping records of student progress, informing students of their next assignments.

COBOL: Common Business Oriented Language. A high level programming language desiged especially for manipulation of business data. It uses terms which are related to ordinary English words.

compile: To translate a high level language into a sequence of machine language instructions for the computer.

compiler: A computer program which replaces certain items of input with series of instructions, usually called subroutines. The program which results from compiling is a translated and expanded version of the original. Compare with **interpreter**

Compuserve: An organization that provides information services via telecommunications. Sometimes referred to as an "information utility."

computer: An electronic device which receives input data, puts them into storage, operates on them according to a program, and outputs the result.

Computer-Assisted Instruction: See "CAI."

computer awareness: Introductory-level knowledge about computers: their capabilities, how they work, limitations, applications, social implications.

Computer-Based Instruction: See "CBI."

computer coordinator: In a school or school district, a person who coordinates computer-related activities such as equipment and software acquisition, computer-related training of teachers, or computer-related curricular materials.

computer education: Education about computers. May include computer science, data processing, or other computer-related subjects.

computer entry: An input to a computer from a terminal device.

computer error: A status word indicating that the computer has detected an error, and awaits a correction. Informally, mistakes ascribed to some aspect of a computer system or application.

computer interaction: The interaction of a computer with a person, through input devices such as a keyboard or joystick and through output devices such as a video display.

Computer-Managed Instruction (CMI): see CMI

computer programming: The development of a set of instructions directing the computer to carry out a desired sequence of operations. The objective is normally the solution of a problem.

Computer-related Learning Materials: Texts, teacher guides, computer programs, or other materials used in teaching about computers or in using computers to teach school subjects.

computer specialist: In a school or school district, a staff person who specializes in computer-related educational curricula or methods.

computer science: The entire spectrum of theoretical and applied disciplines connected with the development and application of computers.

computing: A generic term for all mathematical and logical operations carried out according to precise rules of procedure.

control program (microprocessor): A specific designed sequence of instructions that guides the CPU through the various operations. Most often this program is permanently stored in ROM memory where it can be accessed but not erased by the CPU during operations.

converter: A device which converts data from one physical form to another, e.g. punched card to magnetic tape.

CP/M: Abbreviation for Control Program/Microcomputer. An operating system used on a variety of microcomputers.

CPU: Abbreviation for central processing unit.

CRT: Abbreviation for Cathode-Ray Tube.

cursor: A highlighted mark appearing on the computer display screen. A bright square or underscore character which indicates where the next entry on the keyboard will be recorded.

data: Groups of characters (alphanumeric or otherwise) which represent a specified value or condition. Data provide the building blocks of information.

database: A store of data on files which can be made accessible to a computer. It is designed for operation in connection with an information retrieval system.

database programs: Computer programs used to create, update, and manage a database, and to retrieve information from the data base.

data communication: The transmission and reception of data in the form of electromagnetic signals to a computer.

data communication equipment: The data communication process generally requires at least five elements: a transmitter or source of information; a message; a binary serial interface; a communication channel or link; and a receiver of transmitted information. A data communications interface is often needed to make the binary serial data compatible with the communication channel.

data entry: The writing, reading, or posting to a coding form or to a terminal or precessing medium, of information or instructions.

data processing: Includes all clerical, arithmetical and logical operations on data. Data processing in the context of information technology always implies the use of a computer for these operations.

data storage: The processes of storing information.

data terminal equipment: Any piece of equipment at which a communications path begins or ends.

debug: Isolate and correct errors in a computer routine or program.

delete, a program: To **purge**, or erase a program from a file.

disk drive: A device which reads from, or writes to, magnetic disks.

documentation: Written information about hardware, software or procedures, such as that contained in a user's guide.

drill-and-practice: A class of computer applications in which the computer presents questions or problems, accepts and evaluates students' answers, and gives some kind of feedback to the student. May adapt the questions to the students' level of ability, speed, or interests.

editing, text: Facilities designed into a computer program to permit the original keyboarding of textual copy without regard for the eventual format or medium for publication. Once the copy has been placed in computer storage, it can be edited and justified into any required column width and for any specified type font. See also **word processing.**

EDUNET: A computer-and-communications network serving educational institutions.

electronic chalkboard: Teacher's use of a computer in the classroom in a manner similar to a chalkboard, i.e. to present information to the class or to demonstrate a concept.

electronic data services:

electronic mail: A general term covering the electronic transmission, or distribution, of messages. Unlike a telephone conversation, messages can be transmitted at one time, stored in a computer and then read at a later time.

electronic theft: Theft or illegal use of information stored electronically.

emulator: Hardware or software which makes a system appear, to other hardware or software, as another system. For example, a word processor may be able to emulate a telex, or a computer of one type may be able to appear to software as a different type of computer.

erase computer memory: To replace all the binary digits in a storage device by binary zeros.

field: A section of a computer record which is designated for the storage of specified information. For example, in a bibliographic database, a field might cover the data positions where the dates of publication of each document are recorded.

file: An organized structured, and named collection of information.

file managment program: A computer program which assigns, or recognizes, labels identifying data files, and enables them to be called from storage as required.

floppy disk: A disk made of a flexible material, eg plastic, coated with a magnetic surface onto which information is encoded magnetically. Floppy disks are usually either 5 1/4 inches or 8 inches in diameter.

floppy disk drive: See "disk drive."

flowchart: A chart to represent, for a problem, the flow of data, procedures, growth, equipment, methods, documents, machine instruction, etc.

format statements: A predetermined arrangement of data. It may refer, for example, to: the layout of a printed document; the arrangement of data in a file; the order of instructions in a program. It can also mean a set of typographical commands available at a keyboard.

FORTRAN: An abbreviation for FORmula TRANslator. A high level programming language extensively used for scientific and mathematical programming.

function keys: Specific keys on a terminal keyboard which allow the user to issue a series of commands at a single key stroke. These keys can either be designated by the user, or come already programmed.

game paddle: An input device which is popular to computer games. It moves a target (or cursor) on the video monitor.

graphics plotter: A device which provides hard-copy output of graphics that are usually produced by computer.

graphics programs: Programs or routines that produce lines, curves, and other analog representations of data. They range from a small program that plots a simple graph on a teletypewriter to complex systems that provide multicolored three-dimensional displays, complete with legends--even in different character sizes and fonts.

graphics tablet: A device for inputting graphics. Using a stylus, diagrams, maps, charts or free-hand drawings can be created, and appear instantaneously on a display screen. The tablet can also be used to manipulate the image, or to direct it to a storage device for subsequent recall, or transmission.

hard disk: A circular metal plate with magnetic material on both sides, continuously rotated for reading or writing by means of one or more read/write heads mounted on movable or fixed arms; disks may be permanently mounted on a shaft, or as a package, they may be removable and others placed on the shaft.

hard disk drive: See "disk drive."

hardware: The mechanical, magnetic, electronic and electrical devices which go to make up a computer. Central processing units, display devices, keyboards and disk drives are examples of hardware.

high level programming language: A computer language which allows users to employ a notation with which they are already familiar, eg such terms as: if, then, print, +, etc. Each natural language instruction actually corresponds to several machine code instructions.

information retrieval: Technology and methods concerned with storing and searching through large quantities of information.

input: Information received by a computer, or its storage devices, from outside of the computer.

instruction: A command to a computer to carry out some operations.

instructional games: Game-like computer programs that have some instructional purpose or intent. May involve competition between student and computer or between two or more students.

item: A unit of information relating to a single document, person, etc, contained within a database.

interface: A general term to describe the connecting link between two devices or systems. Most frequently refers to the hardware and software required to couple together two processing elements in a computer system.

internal memory capacity: The amount of information which a memory element, or device has direct access.

interpreter: A computer program that translates a program from a high level language to machine code and executes it.

joystick: A lever whose motions control the movement of a cusor, or it can be used to write on a VDU.

keyboard: A device equipped with an ordered array of keys which are manually operated to encode data or instructions. A typewriter, for example, has a keyboard.

language: A set of representations and rules by which information is communicated within, and between, computers, or between computers and their users.

language interpreter: A general term for any processor, assembler, or other routine that accepts statements in one language and produces equivalent statements in another language.

light pen: An electronic stylus, containing a light sensor, which can be used to specify a position on a cathode ray tube display. Used for communication between a user and a computer.

list: 1. A series of records in a file. 2. the act of printing such a series (without performing any additional processing).

load: To enter information, or a program into a computer.

log on/off: To initiate, or terminate on-line interaction with a computer.

Logo: A high-level computer programming language originally designed to provide a learning environment for children. Used to teach such concepts as procedural thinking, recursion, debugging, graphing.

machine readable form: Capable of being read by a computer input device.

magnetic tape drive: See "tape drive."

math or statistics computation: A computer program that performs mathematical or statistical operations.

memory: A device into which information can be stored for extraction by a computer when required.

memory location: A specific position in computer memory.

microcomputer: A small (desk top) computer which uses a microprocessor as its processing element. Often used loosely to refer to the microprocessor itself.

modem: An abreviation of modulator-demodulator. A device for converting a digital signal (generated, for example, by a computer) into an analog signal by modulation. In this form, the signal can be transmitted along a standard telephone line. The received signal can be reconverted from analog to digital by the same device.

modulation: The addition of information to an electromagnetic signal (the carrier wave).

monitor: Hardware or software used to monitor the activity of a computer system.

mouse: A device which an operator can move over the surface of a graphics tablet. Its position is recorded by the computer, and can be used in moving text and illustrations about.

music board: A Printed Circuit Board that contains logic used in producing sound and music in a computer.

MS-DOS: A disk operating system that runs on IBM Personal Computers and other computers that are compatible with the IBM PC.

name: 1. A term of one or more words to identify a program or a file. 2. To give a name to a program or file.

on-line: Any use of equipment to interact directly with the central processor of a computer.

operating system: Software that manages the computer and its peripheral devices allowing the user to run programs and control operation of the devices..

optical scanner: A special optical device which scans patterns of incident light and generates analog/digital signals which are functions of the incident light synchronized with the scan, the primary purpose being to generate or `read' digital representations of printed or written data.

output: Information transmitted by a computer, or its storage devices, to the outside world. It may, for example, be in the form of print on paper, punched cards or paper tape.

output capability: The number of unit loads that can be driven by the output of a circuit.

p-system: An operating system available for several models of microcomputer.

packaged computer program: Computer program that is published, usually by commercial publishers, for distribution and sale.

paper tape punch: A device which punches paper tape.

parallel Interface: A specific plug-and-socket connection btween two parts of a computer system, like a printer and the processor. Interfaces are in two varieties, serial and parallel. A serial interface moves data one bit after another, serially. A parallel interface uses cable containing enough wires to carry each bit in a character simultaneously, so if the computer uses an eight-bit pattern to encode one character, the parallel interface will contain eight wires, each carrying one bit. Parallel interfaces are faster because they deliver eight bits at a time instead of one.

PASCAL: A language designed to enable teaching of programming as a systematic discipline and to do systems programming. Based on the language, ALGOL, it emphasizes aspects of structured programming.

password: A group of characters which a user inputs to a computer to gain access to the system. Used to protect a computer system from unauthorized access.

PC-DOS: See MS-DOS.

pilot: An original or test program, project, or device. A high-level programming language used for computer-assisted instruction.

port: A place of entry to, or exit from, a central processor.

printed circuit board Not actually a board, but a thin sheet of reinforced plastic with the electrical circuits, wiring and connections to other elements, such as a computer memory, plated on the surface of the plastic.

printer: An output device which converts electronic signals into print on paper.

processing, data: See "data processing."

program: An ordered list of instructions directing a computer to carry out a desired sequence of operations. The objective is normally the solution of a problem.

program file: 1. A flexible, easily updated reference system for the maintenance of the entire software library. 2. A named file containing a program, as distinguished from a data file.

programmer: 1. One who prepares programs for a computer. 2. A person who prepares instruction sequences without necessarily converting them into the detailed codes. 3. A person who prepares problem solving procedures and flowcharts and who may also write and debug routines.

programming language: A specific language used to prepare computer programs. There are hundreds of programming languages.

protocol: A set of conventions between communicating processes on the format and contents of messages to be exchanged.

protocol emulator: A software package that allows a digital node to communicate with a variety of foreign (nondigital) vendor equipment by emulating the communication protocols of the foreign host.

purge: To erase data from a file.

RPG: Report-Program Generator. A high-level programming language used to produce reports from computer data files.

range check: On some systems, this seeks the presence of one or more pairs of values or entries that data must fall within. Each pair of table entries consists of a low- and a high-data value in table lookup procedures.

read/write head: An electromagnetic device used to read from, or write on, a magnetic storage device such as a disk or tape.

records: A unit, or set of data, forming the basic element of a file.

recreational programs Computer programs designed for recreational purposes.

rename, a program or file: Instruct a computer to give a program or data file a new name.

ROM memory: Read-Only Memory. Can not be erased or modified by the user.

run: 1. One execution of a computer routine, program or collection of programs. 2. To command a computer to execute a program.

save: To store a record, file, or program usually on a permanent or semi-permanent storage medium.

screen: 1. A display device used to view computer output. (2) A particular presentation of information on a screen, analogous to a page in a book.

Serial (RS-232) interface: The interface between a modem and the associated data terminal equipment, and standardized by Electronic Industries Association (EIA) standard RS-232.

serial interface: Serial interfaces are widely used to connect terminals to computers; they are technically simpler than parallel interfaces and can be used over longer distances. See also "parallel interface."

simulation: The representation of the behavior of physical or social systems and phenomena by computers, models, or other equipment.

software: The instructions, programs, which are used to direct the operation of a computer. Distinguished from **hardware**.

software package: A generalized program, or set of programs written to cover the requirements of a number of users.

spreadsheet: A class of computer programs that are used to manipulate data and formulas in a "spreadsheet" format, i.e. in rows and columns.

storage: 1. A storage device, or the medium on which information is stored. 2. The process of storing information.

stylus: 1. Synonym for light pen. 2. Device used in conjunction with a graphics tablet to input and manipulate graphical information.

system: An organized set of components which interact in a regulated fashion.

system utilities: A system or program that is developed to perform miscellaneous or utility functions such as copying or printing files.

tape: A strip of material that may be punched, coated, or impregnated with magnetic or optically sensitive substances, and used for data input, storage, or output.

tape drive: A device that moves tape past a head that reads and writes information on the tape.

telecommunication programs: A program which permits the transmission or reception of signals, writing, sounds, or intelligence of any nature by wire, radio, light beam, or any other electromagnetic means.

terminal: A hardware device that transmits input to and receives output from a computer. A small computer is often used as a terminal for a larger computer.

text editing: The editing of text on a computer. It may be carried out on any form of computer, from a mainframe with appropriate software to a dedicated word processor.

The Source: An organization that provides computer and information services to subscribers. Sometimes called an "information utility."

TRSDOS: An operating system for Tandy Radio-Shack computers.

TSO: Time-Sharing Option, an operating system that runs on mainframe computers.

tutorials: A class of instructional computer programs that performs some of the functions of a tutor, i.e. presents information to the learner, asks questions, accepts and evaluates student answers, and tailors instruction to the skill, speed or interests of the learner.

UNIX: A multiprogramming operating system developed at Bell Laboratories that features sophisticated software and text-developing utilities.

user: 1. A person who is using a computer. 2. The person or company using a remote terminal in a time-shared computer system for the purpose of entering a program for execution by the computer.

user friendliness: A system with characteristics, or style, of a system that make it easy or pleasant to interact with the computer.

user's group: Organizations made up of users of various computing systems to give the users an opportunity to share knowledge they have gained in using a digital computing system and exchange programs they have developed.

VMS: Virtual Memory System.

VDU: Video display unit. A device, like a television screen, that displays output from a computer. See also "screen."

voice synthesizer: A device used for the production of speech using artificial means.

word processing: Handling of text via computer. Includes such functions as text editing, storing text electronically, formatting documents, and typesetting.

word processing program: A computer program used by a person to assist in creating, storing, editing, revising, formatting and printing text materials such as letters, essays, or books.

zenix: An operating system that runs on some microcomputers, adapted from a popular operating system called UNIX.

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Note

Unique items appear on separate lines.
Parallel items appear on the same line and are identified by an asterick (*).
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COMPUTER LITERACY

QUESTIONS FOR SUPERINTENDENTS

QUESTIONS ABOUT ADMINISTERING COMPUTER-RELATED POLICIES

1. Does your district have written goals for students' computer literacy?

______Yes, in place

______Yes, in progress

______No

______Don't know

2. If yes, which goals have been established in your district for computer education? Check all that apply.

______Computers to be used as a functional working tool by all students in a wide variety of subject areas

______Computers to manage the educational process by supplying individual prescriptions to each student

______Computer science courses to be offered

______Data processing courses to be offered

______Computers to be used in conjunction with other technologies

______None of the above

______Don't know

3. Does your district have written policies concerning computer utilization?

______Yes

______No

______Don't know

4. If yes, which of the following areas do your district policies cover? Check all that apply:

______Integration of computer-related learning objectives into the existing curricula

______Sharing of equipment

______Development of computer software

______Standardization of hardware and software

______Loaning computers to students or staff

______Graduation requirements

______Recreational use of computers

______Not applicable

5. What has been instrumental in developing and expanding computer activity in your district? Check all that apply:

______Business/community initiative or support

______University/college assistance

______Federal funding

______State assistance

______Local appropriations

______Administrative initiative or support

______Teacher initiative or support

______Student initiative or support

______Local board policy

______Parent initiative or support

______We have no computer-related activities in our school

6. If you have no computer-related activities in your district, what factors have delayed your district's entry into computer education? Check all that apply:

______Cost factors

______How district budgets are organized

______Need for more planning

______Equity issues

______Active opposition

______Lack of trained personnel

______Lack of adequate software

______Lack of adequate hardware

______All of the above

______Other ____

7. Which, if any, of the following courses are taught in your district? Check all that apply:

______Introduction to Computing

______Computer Science

______Computer Programming

______Word Processing

______Data Processing

______None of these courses

8. Does your district have specific timetables for implementing computer-based systems and/or curricula?

______Yes

______No

______Don't know

9. Does your district have a special procurement process for acquiring computer equipment?

______Yes

______No

______Don't know

10. Does your district have specific policies or procedures for obtaining parental input to computer-related decisions?

______Yes

______No

______Don't know

11. In what way are parent groups involved with computers in your district? Check all that apply.

______Providing organized community support

______Funding hardware or software purchases

______Serving as teacher aids

______Helping with planning for computers

______Using school computers at home with their children

______Writing computer programs

______Fund raising for computer-related activities and materials

______Providing individual support

______Other ______________________________

12. Has some non-school group, such as a computer firm in your area, sponsored a project that supported the use of computers in your district?

______Yes

______No

______Don't know

13. For which of the following items are there budgets established in your district? Check all that apply:

______Computer hardware (keyboards, monitors, computers, disk drives, printers, graphic tablets, etc.)

______Computer software and courseware (programs, etc.)

______Teacher training related to hardware and software use

14. How are computers used to support instruction in your district? Check all that apply:

______Used for teaching and learning

______Used for instruction in programming

______Used as a tool in various subjects and courses

______Used for computer-managed instruction

15. In your district, are there specific rules that govern any of the following? Check all that apply.

______Protecting equipment from damage

______Protecting equipment from loss

______Destroying another person's data

______Disrupting the operation of the computer

______Scheduling or sharing equipment

______Scheduling or sharing programs

______Copying copyrighted programs

______Copying other students' graded computer work

16. When school is closed either for the summer or extended holidays, what is your policy regarding computers? Check all that apply.

______Send computers home with students

______Allow teachers or administrators to borrow them

______Distribute them to other selected individuals

______Lock them up for safekeeping

______Leave them in their assigned location

______Use them for school or district training or curriculum development

______Send them out for maintenance

______Use them in summer camp

______None of the above

17. What procedures does your district use for evaluating and selecting computer-related learning materials? Check all that apply:

______An evaluation committee reviews proposed materials

______A computer coordinator or specialist reviews proposed materials

______We rely on salespersons' recommendations

______We rely on external evaluators, such as consultants or state education departments

______A supervisor or administrator reviews proposed materials

______A media specialist reviews proposed materials

______We rely on teacher recommendations

______Other ____

18. Which of the following are methods or techniques used in your district to assess students' skill and knowledge of computer-related topics? Check all that apply:

______Standardized tests

______Teacher-made tests

______Questionnaires

______Project evaluations

______Teachers' observations

______Others' observations

______Other ____

Has your district investigated how computers might be used for any of the following administrative purposes?

		Investigated	Implemented	Neither
19.	Attendance	○	○	○
20.	Student records/ report cards	○	○	○
21.	Payroll	○	○	○
22.	Accounting	○	○	○
23.	Inventory	○	○	○
24.	Printing mailing labels	○	○	○
25.	Electronic mail to staff	○	○	○
26.	Electronic mail to parents	○	○	○
27.	Student scheduling	○	○	○
28.	Student testing	○	○	○
29.	Personnel records	○	○	○

30. Which of the following are you currently using to meet the administrative computing needs of your district? Check all that apply.

______Our own district mainframe computer

______Our own district microcomputer(s)

______A multi-district or regional public computer service

______A commercial computer service

______Other ________________________________

______We do not use computers for administrative purposes

31. Does your district use computers for career guidance?

______Yes

______No

______Don't know

32. Does your district have an assigned computer coordinator who is responsible for computer use in instruction?

______Yes

______No

______Don't know

33. If yes, who assigned the computer coordinator to this position?

______Superintendent/Board of Education

______Principal

______Other Administrator

______Teachers

34. Has your district offered training in introduction to computing, computer programming or computer science to the staff?

______Yes

______No

______Don't know

35. If yes, who was responsible for arranging for inservice training?

______Superintendent

______Assistant Superintendent/Curriculum Supervisor

______Principal

______Teachers

______Other ______________________________

36. If yes, what staff was eligible for training?

_____Teachers

_____Support staff

_____Administration

37. Does your district provide release time or financial incentives for teachers who develop computer-based instructional programs?

_____Yes

_____No

_____Don't know

38. How do you disseminate information concerning computer activities in your district? Check all that apply:

_____Newsletters

_____Computer fairs

_____Computer open house

_____Press releases

_____Letters to parents or staff

_____Faculty meetings

_____Visits to other institutions

_____Demonstrations of new equipment/courseware

_____Conferences or meetings

_____Workshops

_____None of the above

How influential are the following persons or groups in terms of deciding what computer-related courses are to be offered to students?

		Very Influential	Influential	Not Influential
39.	The Superintendent/School Board	○	○	○
40.	School principals	○	○	○
41.	Computer coordinator/specialist	○	○	○
42.	Teachers	○	○	○
43.	Parents	○	○	○
44.	Supervisors	○	○	○
45.	Local businesses	○	○	○
46.	Students	○	○	○
47.	Other ____________________	○	○	○

In your district, who is responsible for each of the following activities?

	Superintendent	Assistant Superintendent	Principal	Assistant Principal	Computer Specialist	Curriculum Specialist	Teachers	Students	Consultants	Parents	Other	No One
48. Deciding what computer-related skills and knowledge are to be learned by students	○	○	○	○	○	○	○	○	○	○	○	○
49. Determining computer-related course offerings	○	○	○	○	○	○	○	○	○	○	○	○
50. Establishing budgets for computer-related projects	○	○	○	○	○	○	○	○	○	○	○	○
51. Planning staff training	○	○	○	○	○	○	○	○	○	○	○	○
52. Implementing staff training programs	○	○	○	○	○	○	○	○	○	○	○	○
53. Evaluating and selecting computer hardware	○	○	○	○	○	○	○	○	○	○	○	○
54. Evaluating and selecting computer software	○	○	○	○	○	○	○	○	○	○	○	○
55. Determining procurement process	○	○	○	○	○	○	○	○	○	○	○	○
56. Assigning computer use	○	○	○	○	○	○	○	○	○	○	○	○
57. Establishing and enforcing rules pertaining to the equitable, ethical and legal use of computers	○	○	○	○	○	○	○	○	○	○	○	○
58. Evaluating student benefits from computer-related programs	○	○	○	○	○	○	○	○	○	○	○	○
59. Communicating with parents and school board re course content, fund-raising, etc.	○	○	○	○	○	○	○	○	○	○	○	○

QUESTIONS ABOUT TEACHING WITH OR ABOUT COMPUTERS

From your experience with using computers in teaching and learning, which of the following have you found to be a disadvantage?

		A Disadvantage	Not a Disadvantage
60.	Lack of access to terminals or microcomputers	○	○
61.	Lack of student interest	○	○
62.	Low quality of educational software	○	○
63.	Reallocation of funds to computers from more pressing needs	○	○
64.	Difficulty with integrating computer-taught skills with the remainder of the curriculum	○	○
65.	Difficulty with managing student use of computers	○	○
66.	Lack of teacher or staff training	○	○
67.	Lack of teacher or staff interest	○	○
68.	Lack of administrative support	○	○

From your experience with using computers in teaching and learing, which of the following have you found to be an advantage?

		An Advantage	Not an Advantage
69.	Providing immediate feedback	○	○
70.	Having great patience	○	○
71.	Keeping the learner actively involved	○	○
72.	Providing self-paced instruction	○	○
73.	Keeping records of student performance	○	○
74.	Providing, through simulations, experiences otherwise not possible in the classroom	○	○

75. Have you personally written or designed a computer program that teaches or provides instruction in a particular topic or skill?

_____No

_____Yes, 1 program

_____Yes, 2-5 programs

_____Yes, 6 or more programs

76. Which of the following sources of information about computing do you use at least once a month? Check all that apply:

_____Newspaper articles

_____Weekly computer periodicals (such as *Infoworld*)

_____General computer periodicals (such as *Popular Computing*, *Byte* magazine, *Consumer Report*)

_____Educational computing periodicals (such as *Electronic Learning*, *Classroom Computer Learning*, *The Computing Teacher*, *THE Journal*)

_____Professional periodicals (such as *Math Teacher*, *AEDS Monitor*)

_____Software catalogs

_____Regional teacher training centers

_____Colleagues and friends

_____Formal classes or workshops, including inservice

_____"User" or other professional groups

_____Electronic data services (such as The Source, Compuserve, EDUNET)

_____Magazines delivered on electronic media

_____Television/radio

_____Other ____

77. What has been the primary source of computer-related curricular material for your district? Check one:

_____Computer manufacturers or distributors

_____Published texts

_____Materials developed by other school systems

_____Material developed within our school or district

_____Public domain materials

_____Professional literature

QUESTIONS ABOUT USING COMPUTER PROGRAMS

78. What types of computer-related courses or workshops have you taken since September 1981? Check all that apply:

______Learning a programming language (such as Pascal, Logo, or BASIC)

______Learning word processing

______Learning computer science

______Learning research applications

______Learning data processing

______Learning business applications

______A general introduction to computing course

______Learning about computer software

______Learning about computer hardware

______Learning authoring languages

______Other, please specify ______________________________

______None

Which of the following computer resources are available in your district?

		Available	Not Available	Don't Know
79.	Card punch	○	○	○
80.	Card reader	○	○	○
81.	Color monitor	○	○	○
82.	CRT or other video monitor	○	○	○
83.	Floppy disk drive	○	○	○
84.	Graphics plotter	○	○	○
85.	Graphics tablet	○	○	○
86.	Hard disk drive	○	○	○
87.	Joystick or game paddle	○	○	○
88.	Light pen	○	○	○
89.	Magazines	○	○	○
90.	Magnetic tape drive, including cassette	○	○	○
91.	Mainframe computer	○	○	○
92.	Microcomputer	○	○	○
93.	"Mouse"	○	○	○
94.	Music board	○	○	○
95.	Optical scanner	○	○	○
96.	Paper tape punch	○	○	○
97.	Paper tape reader	○	○	○
98.	Parallel or serial interface	○	○	○
99.	Persons to assist	○	○	○
100.	Printer	○	○	○
101.	Reference books and manuals	○	○	○
102.	Telephone modem	○	○	○
103.	Textbooks	○	○	○
104.	Voice synthesizer	○	○	○

105. Other ______________________________

Which of the following computer devices have you personally used or operated?

		Used	Not Used	Don't Know
106.	Card punch	○	○	○
107.	Card reader	○	○	○
108.	Color monitor	○	○	○
109.	CRT or other video monitor	○	○	○
110.	Floppy disk drive	○	○	○
111.	Graphics plotter	○	○	○
112.	Graphics tablet	○	○	○
113.	Hard disk drive	○	○	○
114.	Joystick or game paddle	○	○	○
115.	Light pen	○	○	○
116.	Magnetic tape drive, including cassette	○	○	○
117.	Mainframe computer	○	○	○
118.	Microcomputer	○	○	○
119.	"Mouse"	○	○	○
120.	Music board	○	○	○
121.	Optical scanner	○	○	○
122.	Paper tape punch	○	○	○
123.	Paper tape reader	○	○	○
124.	Parallel or serial interface	○	○	○
125.	Printer	○	○	○
126.	Telephone modem	○	○	○
127.	Voice synthesizer	○	○	○

128. Other ____

129. ______I have not used any of these devices

130. Are microcomputers being used with videocassette recorders and/or videodisc players in your district?

_____Yes, with videocassette recorders

_____Yes, with videodisc players

_____Yes, with both

_____No

How often do you personally use the following resources when you need information regarding how to use a computer?

		Often	Sometimes	Never
131.	Manuals supplied by the hardware company or publishers	○	○	○
132.	Technical assistance from the vendor	○	○	○
133.	School or district-level technical assistance	○	○	○
134.	"Users" group	○	○	○
135.	Tutorial programs	○	○	○
136.	Friends/colleagues/family	○	○	○
137.	Reference books	○	○	○
138.	Independent technical assistance	○	○	○
139.	Professional periodicals	○	○	○
140.	Commercial periodicals	○	○	○
141.	Local professional organizations	○	○	○

When initially considering "packaged" computer programs, how important are each of the following?

		Very Important	Important	Not Important
142.	The reputation of the program	○	○	○
143.	The purpose of the program	○	○	○
144.	The data needed to use the program	○	○	○
145.	The equipment needed to run the program	○	○	○
146.	The "user-friendliness" or ease of use of the materials	○	○	○
147.	The author or source of the program	○	○	○
148.	Length or complexity of the documentation	○	○	○
149.	Completeness	○	○	○

150. Other, please specify ________________________________

151. _____I do not evaluate computer programs

152. Given the computer hardware in your district, which of the following kinds of programs are available for you personally to use? Check all that apply:

______Simulations

______Business programs (e.g., spreadsheets)

______Math or statistics computation

______Text editing or word processing

______Tutorial programs

______Drill-and-practice programs

______Data base or file management programs

______Graphics programs

______Authoring language programs

______Telecommunication programs

______Compilers

______Recreational programs

______System utilities

153. Do you have a single-user microcomputer or computer terminal in your office?

_____Yes

_____No

154. Does your secretary have a single-user microcomputer or computer terminal to use at work?

_____Yes

_____No

155. Where do you have access to a computer outside of school? Check all that apply:

______I do not have access to a computer outside of school

______At home

______At a friend's home

______At someone's place of work

______At a college or university

______At a library

______Other, please specify ____

Where have you used the following kinds of programs or software packages?

		School	Home	Not Used
156.	Accounting	○	○	○
157.	Authoring	○	○	○
158.	Business	○	○	○
159.	Communications	○	○	○
160.	Computational	○	○	○
161.	Data base management	○	○	○
162.	Educational	○	○	○
163.	Graphics	○	○	○
164.	Home management	○	○	○
165.	Integrated packages	○	○	○
166.	Recreation	○	○	○
167.	Simulations	○	○	○
168.	Spreadsheets	○	○	○
169.	Statistical analysis	○	○	○
170.	Telecommunications	○	○	○
171.	Utility	○	○	○
172.	Word processing	○	○	○

173. Which of the following sets of keys on a keyboard can you personally operate by "touch" typing? Check all that apply:

_____Alphabetic

_____Numeric

_____Function (for example, "enter" or "return")

_____None

174. How often do you personally use a word processing program or a computer dedicated to word processing?

_____Never

_____Rarely

_____Monthly

_____Weekly

_____Daily

175. How long have you personally been using a word processing program or a dedicated word processor (not necessarily the same program or computer)?

_____I have not used a word processing program

_____Less than one month

_____Two to four months

_____Five months to a year

_____13-24 months

_____More than 2 years

176. For which of the following types of documents do you personally use a word processing program or a computer dedicated to word processing? Check all that apply:

_____Memoranda

_____Letters

_____Short reports (up to 19 pages)

_____Long reports (20 or more pages)

_____Other ______________________________

_____Not applicable

Which of the following outputs from a computer program have you produced or had produced for making decisions or solving problems?

		Produced	Have Not Produced	Don't Know
177.	Spreadsheets	○	○	○
178.	Charts and tables	○	○	○
179.	Graphs	○	○	○
180.	Drawings	○	○	○

181. ______I have not produced any of these outputs

182. Computers are frequently used to access data bases. Which of the following types of data bases have you personally accessed? Check all that apply:

______I have not accessed any data bases

______Career information

______Bibliographical citations (library)

______Stock market

______School or district data (personnel, budget, inventory, etc.)

______Student records

______National press wire services

______Electronic bulletin board

______Computer courseware or other educational resources

______Recreational programs

______Other ____

QUESTIONS ABOUT DEVELOPING COMPUTER PROGRAMS

183. Which of the following activities have you, yourself, performed with a computer? Check all that apply:

_____I have not done any of these activities

_____Loaded a program into memory

_____Saved a program on a disk, tape, or cards

_____Named or renamed a program file

_____Listed a program

_____Backed up a copy of a program or file

_____Deleted a program from disk or tape

_____Erased computer memory

_____Accessed a catalog or menu of saved programs

_____Run a program

_____Tested and debugged a program

184. In which of the following languages have you written a program? Check all that apply:

______I have not written a program

______APL

______Assembly Language

______BASIC

______COBOL

______FORTRAN

______Logo

______Pascal

______Pilot

______RPG

______Other ________________

185. What was the length, in lines, of the longest program you have written?

______0, I have not written a program

______1-10 lines or 1 procedure

______11-25 lines or 2-3 procedures

______26-50 lines or 4-10 procedures

______51-100 lines or 11-20 procedures

______101 or more lines or 21 or more procedures

186. What is the longest program--written by someone else--that you have personally modified, edited, or changed in some way so that it would perform a different task?

______I have never changed a program

______1-20 lines (approximately 1 screen)

______21-40 lines (approximately 2 screens)

______40 or more lines

187. Have you, yourself, written a computer program containing any of the following elements? Check all that apply:

______I have not written a program

______Repetition or iteration

______Conditional decisions ("if, then")

______Use of variables

______Logical operations

______Arithmetic operations

______Sound output

______Graphical output

______Using arrays

______Using data files

______Statements for accepting input from keyboard or other peripheral device

______Format statements or image strings for outputting information on video display, printer or other peripheral device

188. Which of the following sources of inaccuracies in a program output have you experienced? Check all that apply:

______The input data was inaccurate ("Garbage in/ garbage out")

______The program "rounded off" inappropriately

______There was a logical error in the program

______The input data was called from the wrong memory location (wrong field, wrong variable, etc.)

______The program was inappropriate for the problem

______Other, please specify ______________________________

______None

QUESTIONS ABOUT ANALYZING COMPUTER APPLICATIONS

Many districts use computers for recording and accessing data about students and staff. Please answer the following four questions if your district uses computers for this purpose. Check all that apply:

189. Who uses the computer?

______Principal

______Teachers

______Special computer personnel

______Guidance counselors

______Secretaries, Clerks

______Students

______Other ____

190. What types of information are maintained in the computer system about students?

______Classes requested
______Classes enrolled
______Grades received
______Homeroom assignment
______Standard test scores
______Honors
______School enrolled
______Personal profile
______Attendance
______Class schedule
______Residence
______Age (Birth date)
______Telephone number
______Other ____

191. What types of information are maintained in the computer system about staff?

______Salary
______Residence
______Years of service
______Educational attainment
______Current grade level of classes
______Subject areas of current classes
______School
______Certification status
______Other ____

192. What sorts of summary information do you retrieve or generate from the student record system in your district?

______Course enrollments

______Student schedules

______School or district standardized test score summaries

______Bussing schedules and routes

______Attendance records

______Room/building utilization

______Grade point averages

______Class ranks

______Other ______________________________

193. Which of the following groups utilize computer generated reports in your district?

______Administrative personnel

______Instructional personnel

______Students

______Parents

QUESTIONS ABOUT UNDERSTANDING SOCIAL ISSUES RELATED TO COMPUTERS

The following administrative tasks may be completed by you, personally, by a member of your staff, or by an outside contractor. Please indicate, for each task, whether the task is completed with computer assistance, without computer assistance, or not done at all.

		With Computer Assistance	Without Computer Assistance	Not Done
194.	Mathematical calculations, such as those used in maintaining a checkbook	○	○	○
195.	Writing letters	○	○	○
196.	Operating small appliances	○	○	○
197.	Scoring student tests	○	○	○
198.	Reporting standarized test scores to parents	○	○	○
199.	Maintaining mailing lists	○	○	○
200.	Retaining student records	○	○	○
201.	Scheduling classes	○	○	○
202.	Scheduling transportation	○	○	○
203.	Performing statistical analyses	○	○	○
204.	Constructing individualized instruction plans (IEP's)	○	○	○
205.	Keeping student grades	○	○	○
206.	Creating student report cards	○	○	○
207.	Operating security system	○	○	○
208.	Operating air conditioning/heating system	○	○	○
209.	Operating lights	○	○	○
210.	Writing payroll checks	○	○	○
211.	Operating a sprinkler (fire prevention or landscape watering) system	○	○	○
212.	Operating a telephone answering system	○	○	○
213.	Labor relations and negotiations	○	○	○
214.	Other ____________________	○	○	○

215. Which of the following data quality assurance activities have you done or directed someone else to do? Check all that apply:

______Established categories of data to be collected

______Identified indicators or measures for data categories

______Obtained data

______Dealt with missing data

______Changed data into a machine-readable form

______Verified machine data against raw data

______Conducted range check

______Examined summary statistics, such as totals, means and standard deviations

______Other ____

In your district, how often have any of the following computer-related problems occurred in the past year?

		Frequency			
	Problem	Never	1-2 Times	3-5 Times	6+ Times
216.	Intentional equipment damage	○	○	○	○
217.	Equipment theft	○	○	○	○
218.	Intentional destruction of data	○	○	○	○
219.	Unauthorized change of data	○	○	○	○
220.	Theft of data	○	○	○	○
221.	Copying copyrighted programs	○	○	○	○
222.	Theft of passwords	○	○	○	○
223.	Intentional disruption of operating system	○	○	○	○
224.	Student cheating on computer projects	○	○	○	○

225. In the past year have you been affected by a "computer error" in your district?

______Yes

______No

226. If yes, generally how quickly was the error fixed?

______As soon as it was noticed (i.e., immediately)

______Within one day

______Within one week

______In 1-2 weeks

______In 3-4 weeks

______It has not been fixed

227. If yes, how much did the error cost?

______Don't know

______Less than $50

______$51 - $500

______$501 - $5,000

______$5,000+

228. In the past year, have you heard any complaints from students, parents, or employees about loss of jobs or curtailment of jobs due to the introduction of computers?

______Yes

______No

229. In the past year, have you heard any student, parent, or employee tell you that they are using a computer in their job?

______Yes

______No

230. Have you ever been required to interact with a computer when you would have preferred to interact with a person (for example, a bank machine teller instead of a human teller)?

______Yes

______No

231. In the past month, how many complaints have you received from parents, students, or district employees regarding computer-related invasion of privacy?

______None

______1-3

______4-10

______11-20

______21+

232. Which of the following actions have you taken because you were concerned about the possibility of having your personal privacy invaded by a computer? Check all that apply:

______Omitting certain information when filling out forms or applications

______Requesting your name be removed from a list

______Declining to provide your social security number

______Complaining to government agencies

______Writing to a legislator

______Writing to the editor of a newspaper or magazine

______Other ________________________________

______I have not taken any such actions

233. Which of the following actions have you taken in your district to protect the privacy of entries on a computerized data base? Check all that apply:

______Restricted or limited the data that was collected or entered into the data base

______Identified individuals by identification number instead of names

______Stored information necessary to link names with ID numbers in a separate location

______Periodically purged data

______Encoded all data

______Restricted physical access to terminals

______Assigned user "log on" ID to restrict access to data

______Encrypted data when transferring from one location to another

______Restricted physical access to data cards, tapes, or disks

______I have not taken any such actions

234. Do you (or any member of your family) have a computer at home?

______Yes

______No

235. If yes, about how many minutes per week do you use it?

______Minutes

If yes, what proportion of the time that you spend using a computer at home is spent in the following ways?

	Computer Use	Proportion of Time
236.	Working alone	0% 25% 50% 75% 100%
237.	Teaching someone	0% 25% 50% 75% 100%
238.	Working together with someone	0% 25% 50% 75% 100%

239. If yes, what proportion of the time that you spend using computer at home is spent in recreation use (either alone or with others)?

______0%

______25%

______50%

______75%

______100%

QUESTIONS ABOUT UNDERSTANDING COMPUTER-RELATED CONCEPTS AND TERMS

240. Which of the following operating systems have you personally used?

______CP/M

______Apple DOS3.3

______TRSDOS

______MS-DOS or PC-DOS

______Unix

______UCSD-p-system

______Zenix

______VMS

______TSO

______Other ______________________________

______Don't know

______I have not used any operating system

Which of the following data communication equipment or data terminal equipment have you used?

		Used	Not Used	Don't Know
241.	Modem	○	○	○
242.	Serial (RS232) or Parallel Interface	○	○	○
243.	Port	○	○	○
244.	Protocol Emulator or Converter	○	○	○

QUESTIONS THAT INVENTORY COMPUTER-RELATED RESOURCES

245. Approximately what percentage of the microcomputers in your district are reserved strictly for teacher use (for classroom management, inservice training, etc.)?

______0-25% of the microcomputers

______26-50% of the microcomputers

______51-75% of the microcomputers

______76-100% of the microcomputers

How are computer resources (terminals, microcomputers, etc.) shared in your district? Check the one that most closely describes your district, for each school level.

	High Schools (246)	Middle or Jr. High Schools (247)	Elementary Schools (248)
All schools have approximately the same number of computers that they keep all year.	○	○	○
One school has more computers than the other(s) and keeps them all year.	○	○	○
A number of computers are rotated as a group through the schools for a specific period of time.	○	○	○
The number of computers varies from school to school.	○	○	○

COMPUTER LITERACY

QUESTIONS FOR PRINCIPALS

QUESTIONS ABOUT ADMINISTERING COMPUTER-RELATED POLICIES

1. Does your school have written goals for students' computer literacy?

_____Yes, in place

_____Yes, in progress

_____No

_____Don't know

2. If yes, which goals have been established in your school for computer education? Check all that apply.

_____Computers to be used as a functional working tool by all students in a wide variety of subject areas

_____Computers to manage the educational process by supplying individual prescriptions to each student

_____Computer science courses to be offered

_____Data processing courses to be offered

_____Computers to be used in conjunction with other technologies

_____None of the above

_____Don't know

3. Does your school have written policies concerning computer utilization?

_____Yes

_____No

_____Don't know

4. If yes, which of the following areas do your school policies cover? Check all that apply:

_____Integration of computer-related learning objectives into the existing curricula

_____Sharing of equipment

_____Development of computer software

_____Standardization of hardware and software

_____Loaning computers to students or staff

_____Graduation requirements

_____Recreational use of computers

_____Not applicable

5. What has been instrumental in developing and expanding computer activity in your school? Check all that apply:

_____Business/community initiative or support

_____University/college assistance

_____Federal funding

_____State assistance

_____Local appropriations

_____Administrative initiative or support

_____Teacher initiative or support

_____Student initiative or support

_____Local board policy

_____Parent initiative or support

_____We have no computer-related activities in our school

6. Are computer units or courses offered as electives or as requirements in your school?

_____Yes, as electives

_____Yes, as requirements

_____Yes, both as electives and requirements

_____No

7. Which, if any, of the following courses are taught in your school? Check all that apply:

_____Introduction to Computing

_____Computer Science

_____Computer Programming

_____Word Processing

_____Data Processing

_____None of these courses

8. Have the enrollments for computer-related courses in your school increased since last year?

_____Yes, in elective courses

_____Yes, in requirement courses

_____Yes, in both

_____No

_____Don't know

9. Does your school have specific timetables for implementing computer-based systems and/or curricula?

_____Yes

_____No

_____Don't know

10. Does your school have a special procurement process for acquiring computer equipment?

_____Yes

_____No

_____Don't know

11. Does your school have specific policies or procedures for obtaining parental input to computer-related decisions?

_____Yes

_____No

_____Don't know

12. In what way are parent groups involved with computers in your school? Check all that apply:

_____Providing organized community support

_____Funding hardware or software purchases

_____Serving as teacher aids

_____Helping with planning for computers

_____Using school computers at home with their children

_____Writing computer programs

_____Fund raising for computer-related activities and materials

_____Providing individual support

_____Other ____

13. Has some non-school group, such as a computer firm in your area, sponsored a project that supported the use of computers in your school?

_____Yes

_____No

_____Don't know

14. What mechanics have been put in operation for parents to become knowledgeable about computers and to be informed about what their children are doing? Check all that apply:

_____Parent/teacher meetings and demonstrations

_____Parent/student workshops

_____Computer assignments and printouts sent home

_____Assistance in purchasing appropriate hardware and software for home use

_____Student assignments to be done at home

_____Other ____

_____None of the above

15. For which of the following items are there budgets established in your school? Check all that apply:

_____Computer hardware (keyboards, monitors, computers, disk drives, printers, graphics tablets, etc.)

_____Computer software and courseware (programs, etc.)

_____Teacher training related to hardware and software use

16. How are computers used to support instruction in your school? Check all that apply:

_____Used for teaching and learning

_____Used for instruction in programming

_____Used as a tool in various subjects and courses

_____Used for computer-managed instruction

In which of the subject areas or school programs listed below do students learn to use and/or program computers?

		Learn to Use As A Tool	Learn to Program	Use for Learning Subject Matter	Not Applicable
17.	Art	○	○	○	○
18.	Business Education	○	○	○	○
19.	Introduction to Computing	○	○	○	○
20.	Computer Programming	○	○	○	○
21.	Computer Science	○	○	○	○
22.	Distributive Education	○	○	○	○
23.	Economics	○	○	○	○
24.	English	○	○	○	○
25.	Foreign Language	○	○	○	○
26.	Health	○	○	○	○
27.	Home Economics	○	○	○	○
28.	Independent Study	○	○	○	○
29.	Mathematics	○	○	○	○
30.	Music	○	○	○	○
31.	Physical Education	○	○	○	○
32.	Programs for Gifted Students	○	○	○	○
33.	Science	○	○	○	○
34.	Social Studies	○	○	○	○
35.	Special Education	○	○	○	○
36.	Vocational Education	○	○	○	○

37. Other, please specify ______________________________

38. In your school, are there specific rules that govern any of the following? Check all that apply:

_____Protecting equipment from damage

_____Protecting equipment from loss

_____Destroying another person's data

_____Disrupting the operation of the computer

_____Scheduling or sharing equipment

_____Scheduling or sharing programs

_____Copying copyrighted programs

_____Copying other students' graded computer work

39. When school is closed either for the summer or extended holidays, what is your policy regarding computers? Check all that apply.

_____Send computers home with students

_____Allow teachers or administrators to borrow them

_____Distribute them to other selected individuals

_____Lock them up for safekeeping

_____Leave them in their assigned location

_____Use them for school or district training or curriculum development

_____Send them out for maintenance

_____Use them in summer camp

_____None of the above

40. What procedures does your school use for evaluating and selecting computer-related learning materials? Check all that apply:

_____An evaluation committee reviews proposed materials

_____A computer coordinator or specialist reviews proposed materials

_____We rely on salespersons' recommendations

_____We rely on external evaluators, such as consultants or state education departments

_____A supervisor or administrator reviews proposed materials

_____A media specialist reviews proposed materials

_____We rely on teacher recommendations

_____Other ____

41. Which of the following are methods or techniques used in your school to assess student's skill and knowledge of computer-related topics? Check all that apply:

_____Standardized tests

_____Teacher-made tests

_____Questionnaires

_____Project evaluations

_____Teachers' observations

_____Others' observations

_____Other ____

Has your school investigated how computers might be used for any of the following administrative purposes?

		Investigated	Implemented	Neither
42.	Attendance	○	○	○
43.	Student records/ report cards	○	○	○
44.	Payroll	○	○	○
45.	Accounting	○	○	○
46.	Inventory	○	○	○
47.	Printing mailing labels	○	○	○
48.	Electronic mail to staff	○	○	○
49.	Electronic mail to parents	○	○	○
50.	Student scheduling	○	○	○
51.	Student testing	○	○	○
52.	Personnel records	○	○	○

53. Which of the following are you currently using to meet the administrative computing needs of your school? Check all that apply:

_____Our own school mainframe computer

_____Our own school microcomputer(s)

_____A multi-district or regional public computer service

_____A commercial computer service

_____Other ______________________________

_____We do not use computers for administrative purposes

54. Does your school use computers for career guidance?

_____Yes

_____No

_____Don't know

55. Does your school have an assigned computer coordinator who is responsible for computer use in instruction?

_____Yes

_____No

_____Don't know

56. If yes, who assigned the computer coordinator to this position?

_____Superintendent/Board of Education

_____Principal

_____Other Administrator

_____Teachers

57. Has your school offered training in introduction to computing, computer programming or computer science to the staff?

_____Yes

_____No

_____Don't know

58. If yes, who was responsible for arranging for inservice training?

_____Superintendent

_____Assistant Superintendent/Curriculum Supervisor

_____Principal

_____Teachers

_____Other ____

59. If yes, what staff was eligible for training?

_____Teachers

_____Support staff

_____Administration

60. Does your school provide release time or financial incentives for teachers who develop computer-based instructional programs?

_____Yes

_____No

_____Don't know

61. How do you disseminate information concerning computer activities in your school? Check all that apply:

_____Newsletters

_____Computer fairs

_____Computer open house

_____Press releases

_____Letters to parents or staff

_____Faculty meetings

_____Visits to other institutions

_____Demonstrations of new equipment/courseware

_____Conferences or meetings

_____Workshops

_____None of the above

62. Is your school involved in a network, consortium or organization that does the following? Check all that apply:

_____Shares hardware resources

_____Shares software resources

_____Shares data

_____Shares personnel

_____Shares ideas

_____Not involved

How influential are the following persons or groups in terms of deciding what computer-related courses are to be offered to students?

		Very Influential	Influential	Not Influential
63.	The Superintendent/School Board	○	○	○
64.	School principals	○	○	○
65.	Computer coordinator/specialist	○	○	○
66.	Teachers	○	○	○
67.	Parents	○	○	○
68.	Supervisors	○	○	○
69.	Local businesses	○	○	○
70.	Students	○	○	○
71.	Other ______________________	○	○	○

In your district, who is responsible for each of the following activities?

	Superintendent	Assistant Superintendent	Principal	Assistant Principal	Computer Specialist	Curriculum Specialist	Teachers	Students	Consultants	Parents	Other	No One
72. Deciding what computer-related skills and knowledge are to be learned by students	○	○	○	○	○	○	○	○	○	○	○	○
73. Determining computer-related course offerings	○	○	○	○	○	○	○	○	○	○	○	○
74. Establishing budgets for computer-related projects	○	○	○	○	○	○	○	○	○	○	○	○
75. Planning staff training	○	○	○	○	○	○	○	○	○	○	○	○
76. Implementing staff training programs	○	○	○	○	○	○	○	○	○	○	○	○
77. Evaluating and selecting computer hardware	○	○	○	○	○	○	○	○	○	○	○	○
78. Evaluating and selecting computer software	○	○	○	○	○	○	○	○	○	○	○	○
79. Determining procurement process	○	○	○	○	○	○	○	○	○	○	○	○
80. Assigning computer use	○	○	○	○	○	○	○	○	○	○	○	○
81. Establishing and enforcing rules pertaining to the equitable, ethical and legal use of computers	○	○	○	○	○	○	○	○	○	○	○	○
82. Evaluating student benefits from computer-related programs	○	○	○	○	○	○	○	○	○	○	○	○
83. Communicating with parents and school board re course content, fund-raising, etc.	○	○	○	○	○	○	○	○	○	○	○	○

QUESTIONS ABOUT TEACHING WITH OR ABOUT COMPUTERS

Listed below are some ways teachers use or teach about computers. Please check those activities that currenty take place in your school and those activities that are being planned for your school.

	Computer Activity	Current Use	Future Plans
	Use		
84.	For numerical calculations	○	○
85.	To run simulations	○	○
86.	For instructional games	○	○
87.	As leisure time activity and reward	○	○
88.	For student problem solving	○	○
89.	For drill-and-practice	○	○
90.	As a tutor (teach content)	○	○
91.	To demonstrate concepts	○	○
92.	To score tests	○	○
93.	As an instructional management aid	○	○
94.	As a material generator (tests or worksheets)	○	○
95.	For information retrieval	○	○
96.	For student analysis of data	○	○
97.	For word processing	○	○
98.	For special needs students	○	○
99.	To control laboratory equipment	○	○
	Teach		
100.	To teach programming	○	○
101.	To teach computer operation	○	○
102.	To teach data processing	○	○
103.	To teach hardware & software procedures	○	○
104.	To teach history of computers	○	○
105.	To teach how computers are applied	○	○
106.	To teach about computer careers	○	○
107.	To teach about the role and impact of computers in society	○	○
108.	To teach problem solving	○	○

109. Other, please specify ______________________________

In what subject areas does your school individualize instruction based on computerized testing and computer-managed instruction?

		For individual educational plans (IEP's)	Other than for IEP's
110.	Art/Graphic Arts	○	○
111.	Business Education	○	○
112.	Computer Education (fundamentals of computing)	○	○
113.	Computer Programming (in-depth study of a programming language)	○	○
114.	English/Language Arts	○	○
115.	Foreign Languages	○	○
116.	Health	○	○
117.	Home Economics	○	○
118.	Industrial Arts	○	○
119.	Mathematics	○	○
120.	Music	○	○
121.	Performing Arts	○	○
122.	Physical Education	○	○
123.	Science	○	○
124.	Social Studies/Social Science	○	○

From your experience with using computers in teaching and learning, which of the following have you found to be a disadvantage?

		A Disadvantage	Not a Disadvantage
125.	Lack of access to terminals or microcomputers	○	○
126.	Lack of student interest	○	○
127.	Low quality of educational software	○	○
128.	Reallocation of funds to computers from more pressing needs	○	○
129.	Difficulty with integrating computer-taught skills with the remainder of the curriculum	○	○
130.	Difficulty with managing student use of computers	○	○
131.	Lack of teacher or staff training	○	○
132.	Lack of teacher or staff interest	○	○
133.	Lack of administrative support	○	○

From your experience with using computers in teaching and learning, which of the following have you found to be an advantage?

		An Advantage	Not an Advantage
134.	Providing immediate feedback	○	○
135.	Having great patience	○	○
136.	Keeping the learner actively involved	○	○
137.	Providing self-paced instruction	○	○
138.	Keeping records of student performance	○	○
139.	Providing, through simulations, experiences otherwise not possible in the classroom	○	○

140. Have you personally written or designed a computer program that teaches or provides instruction in a particular topic or skill?

_____No

_____Yes, 1 program

_____Yes, 2-5 programs

_____Yes, 6 or more programs

141. Which of the following sources of information about computing do you use at least once a month? Check all that apply:

______Newspaper articles

______Weekly computer periodicals (such as Infoworld)

______General computer periodicals (such as Popular Computing, Byte magazine, Consumer Report)

______Educational computing periodicals (such as Electronic Learning, Classroom Computer Learning, The Computing Teacher, THE Journal)

______Professional periodicals (such as Math Teacher, AEDS Monitor)

______Software catalogs

______Regional teacher training centers

______Colleagues and friends

______Formal classes or workshops, including inservice

______"User" or other professional groups

______Electronic data services (such as The Source, Compuserve, EDUNET)

______Magazines delivered on electronic media

______Television/radio

______Other ____________________________________

142. What has been the primary source of computer-related curricular material for your school? Check one:

_____Computer manufacturers or distributors

_____Published texts

_____Materials developed by other school systems

_____Material developed within our school or district

_____Public domain materials

_____Professional literature

143. Which individuals in your school teach others about or how to use computers? Check all that apply:

_____Administrators

_____Teachers

_____Paid teacher aides or paraprofessionals

_____Computer specialists

_____Library media specialists

_____Volunteers

_____Other school staff

_____Students

_____Other ____

QUESTIONS ABOUT USING COMPUTER PROGRAMS

144. What types of computer-related courses or workshops have you taken since September 1981? Check all that apply:

______Learning a programming language (such as Pascal, Logo, or BASIC)

______Learning word processing

______Learning computer science

______Learning research applications

______Learning data processing

______Learning business applications

______A general introduction to computing course

______Learning about computer software

______Learning about computer hardware

______Learning authoring languages

______Other, please specify ____________________________

______None

Which of the following computer resources are available in your school?

		Available	Not Available	Don't Know
145.	Card punch	○	○	○
146.	Card reader	○	○	○
147.	Color monitor	○	○	○
148.	CRT or other video monitor	○	○	○
149.	Floppy disk drive	○	○	○
150.	Graphics plotter	○	○	○
151.	Graphics tablet	○	○	○
152.	Hard disk drive	○	○	○
153.	Joystick or game paddle	○	○	○
154.	Light pen	○	○	○
155.	Magazines	○	○	○
156.	Magnetic tape drive, including cassette	○	○	○
157.	Mainframe computer	○	○	○
158.	Microcomputer	○	○	○
159.	"Mouse"	○	○	○
160.	Music board	○	○	○
161.	Optical scanner	○	○	○
162.	Paper tape punch	○	○	○
163.	Paper tape reader	○	○	○
164.	Parallel or serial interface	○	○	○
165.	Persons to assist	○	○	○
166.	Printer	○	○	○
167.	Reference books and manuals	○	○	○
168.	Telephone modem	○	○	○
169.	Textbooks	○	○	○
170.	Voice synthesizer	○	○	○

171. Other ______________________________

Which of the following computer devices have you personally used or operated?

		Used	Not Used	Don't Know
172.	Card punch	○	○	○
173.	Card reader	○	○	○
174.	Color monitor	○	○	○
175.	CRT or other video monitor	○	○	○
176.	Floppy disk drive	○	○	○
177.	Graphics plotter	○	○	○
178.	Graphics tablet	○	○	○
179.	Hard disk drive	○	○	○
180.	Joystick or game paddle	○	○	○
181.	Light pen	○	○	○
182.	Magnetic tape drive, including cassette	○	○	○
183.	Mainframe computer	○	○	○
184.	Microcomputer	○	○	○
185.	"Mouse"	○	○	○
186.	Music board	○	○	○
187.	Optical scanner	○	○	○
188.	Paper tape punch	○	○	○
189.	Paper tape reader	○	○	○
190.	Parallel or serial interface	○	○	○
191.	Printer	○	○	○
192.	Telephone modem	○	○	○
193.	Voice synthesizer	○	○	○

194. Other ____

195. ______I have not used any of these devices

196. Are microcomputers being used with videocassette recorders and/or videodisc players in your school?

_____Yes, with videocassette recorders

_____Yes, with videodisc players

_____Yes, with both

_____No

How often do you personally use the following resources when you need information regarding how to use a computer?

		Often	Sometimes	Never
197.	Manuals supplied by the hardware company or publishers	○	○	○
198.	Technical assistance from the vendor	○	○	○
199.	School or district-level technical assistance	○	○	○
200.	"Users" group	○	○	○
201.	Tutorial programs	○	○	○
202.	Friends/colleagues/family	○	○	○
203.	Reference books	○	○	○
204.	Independent technical assistance	○	○	○
205.	Professional periodicals	○	○	○
206.	Commercial periodicals	○	○	○
207.	Local professional organizations	○	○	○

When initially considering "packaged" computer programs, how important are each of the following?

		Very Important	Important	Not Important
208.	The reputation of the program	○	○	○
209.	The purpose of the program	○	○	○
210.	The data needed to use the program	○	○	○
211.	The equipment needed to run the program	○	○	○
212.	The "user-friendliness" or ease of use of the materials	○	○	○
213.	The author or source of the program	○	○	○
214.	Length or complexity of the documentation	○	○	○
215.	Completeness	○	○	○

216. Other, please specify ______________________________

217. _____I do not evaluate computer programs

218. Given the computer hardware in your school, which of the following kinds of programs are available for you personally to use? Check all that apply:

______Simulations

______Business programs (e.g., spreadsheets)

______Math or statistics computation

______Text editing or word processing

______Tutorial programs

______Drill-and-practice programs

______Data base or file management programs

______Graphics programs

______Authoring language programs

______Telecommunication programs

______Compilers

______Recreational programs

______System utilities

219. Do you have a single-user microcomputer or a computer terminal in your office?

_____Yes

_____No

220. Does your secretary have a single-user microcomputer or a computer terminal to use at work?

_____Yes

_____No

221. Where do you have access to a computer outside of school? Check all that apply:

_____I do not have access to a computer outside of school

_____At home

_____At a friend's home

_____At someone's place of work

_____At a college or university

_____At a library

_____Other, please specify ______________________________

Where have you used the following kinds of programs or software packages?

		School	Home	Not Used
222.	Accounting	○	○	○
223.	Authoring	○	○	○
224.	Business	○	○	○
225.	Communications	○	○	○
226.	Computational	○	○	○
227.	Data base management	○	○	○
228.	Educational	○	○	○
229.	Graphics	○	○	○
230.	Home management	○	○	○
231.	Integrated packages	○	○	○
232.	Recreation	○	○	○
233.	Simulations	○	○	○
234.	Spreadsheets	○	○	○
235.	Statistical analysis	○	○	○
236.	Telecommunications	○	○	○
237.	Utility	○	○	○
238.	Word processing	○	○	○

239. Which of the following sets of keys on a keyboard can you personally operate by "touch" typing? Check all that apply:

_____Alphabetic

_____Numeric

_____Function (for example, "enter" or "return")

_____None

240. How often do you personally use a word processing program or a computer dedicated to word processing?

_____Never

_____Rarely

_____Monthly

_____Weekly

_____Daily

241. How long have you personally been using a word processing program or a dedicated word processor (not necessarily the same program or computer)?

_____I have not used a word processing program

_____Less than one month

_____Two to four months

_____Five months to a year

_____13-24 months

_____More than 2 years

242. For which of the following types of documents do you personally use a word processing program or a computer dedicated to word processing? Check all that apply:

_____Memoranda

_____Letters

_____Short reports (up to 19 pages)

_____Long reports (20 or more pages)

_____Other ____

_____Not applicable

Which of the following outputs from a computer program have you produced or had produced for making decisions or solving problems?

		Produced	Have Not Produced	Don't Know
243.	Spreadsheets	○	○	○
244.	Charts and tables	○	○	○
245.	Graphs	○	○	○
246.	Drawings	○	○	○

247. _____I have not produced any of these outputs

248. Computers are frequently used to access data bases. Which of the following types of data bases have you personally accessed? Check all that apply:

______I have not accessed any data bases

______Career information

______Bibliographical citations (library)

______Stock market

______School or district data (personnel, budget, inventory, etc.)

______Student records

______National press wire services

______Electronic bulletin board

______Computer courseware or other educational resources

______Recreational programs

______Other ____

QUESTIONS ABOUT DEVELOPING COMPUTER PROGRAMS

249. Which of the following activities have you, yourself, performed with a computer? Check all that apply:

_____I have not done any of these activities

_____Loaded a program into memory

_____Saved a program on a disk, tape, or cards

_____Named or renamed a program file

_____Listed a program

_____Backed up a copy of a program or file

_____Deleted a program from disk or tape

_____Erased computer memory

_____Accessed a catalog or menu of saved programs

_____Run a program

_____Tested and debugged a program

250. In which of the following languages have you written a program? Check all that apply:

______I have not written a program

______APL

______Assembly Language

______BASIC

______COBOL

______FORTRAN

______Logo

______Pascal

______Pilot

______RPG

______Other ___________________

251. What was the length, in lines, of the longest program you have written?

______0, I have not written a program

______1-10 lines or 1 procedure

______11-25 lines or 2-3 procedures

______26-50 lines or 4-10 procedures

______51-100 lines or 11-20 procedures

______101 or more lines or 21 or more procedures

252. What is the longest program--written by someone else--that you have personally modified, edited, or changed in some way so that it would perform a different task?

______I have never changed a program

______1-20 lines (approximately 1 screen)

______21-40 lines (approximately 2 screens)

______40 or more lines

253. Have you, yourself, written a computer program containing any of the following elements? Check all that apply:

______I have not written a program

______Repetition or iteration

______Conditional decisions ("if, then")

______Use of variables

______Logical operations

______Arithmetic operations

______Sound output

______Graphical output

______Using arrays

______Using data files

______Statements for accepting input from keyboard or other peripheral device

______Format statements or image strings for outputting information on video display, printer or other peripheral device

254. Which of the following sources of inaccuracies in a program output have you experienced? Check all that apply:

______The input data was inaccurate ("Garbage in/ garbage out")

______The program "rounded off" inappropriately

______There was a logical error in the program

______The input data was called from the wrong memory location (wrong field, wrong variable, etc.)

______The program was inappropriate for the problem

______Other, please specify ______________________________

______None

QUESTIONS ABOUT ANALYZING COMPUTER APPLICATIONS

Many schools use computers for recording and accessing data about students and staff. Please answer the following four questions if your school uses computers for this purpose. Check all that apply:

255. Who uses the computer?

______Principal

______Teachers

______Special computer personnel

______Guidance counselors

______Secretaries, Clerks

______Students

______Other ____

256. What types of information are maintained in the computer system about students?

______Classes requested
______Classes enrolled
______Grades received
______Homeroom assignment
______Standard test scores
______Honors
______School enrolled
______Personal profile
______Attendance
______Class schedule
______Residence
______Age (Birth date)
______Telephone number
______Other ______________________________________

257. What types of information are maintained in the computer system about staff?

______Salary
______Residence
______Years of service
______Educational attainment
______Current grade level of classes
______Subject areas of current classes
______School
______Certification status
______Other ______________________________________

258. What sorts of summary information do you retrieve or generate from the student record system at your school?

______Course enrollments

______Student schedules

______School or district standardized test score summaries

______Bussing schedules and routes

______Attendance records

______Room/building utilization

______Grade point averages

______Class ranks

______Other ____

259. Which of the following groups utilize computer generated reports in your school?

______Administrative personnel

______Instructional personnel

______Students

______Parents

260. Before deciding to use a computer, people frequently consider factors that might argue against computer use. Which of the following have you considered? Check all that apply:

______Equipment acquisition costs

______Equipment-related costs

______Equipment availability (accessibility)

______Hardware maintenance

______Software maintenance

______Software acquisition costs

______Software-related costs

______Software availability/accessibility/quality

______Equipment capacity (memory)

______Equipment capacity (CPU)

______Textbook availability

______Data gathering costs

______Data storage costs

______Data entry costs

______Programming costs

______Output capabilities

______Other ____

QUESTIONS ABOUT UNDERSTANDING SOCIAL ISSUES RELATED TO COMPUTERS

The following administrative tasks may be completed by you, personally, by a member of your staff, or by an outside contractor. Please indicate, for each task, whether the task is completed with computer assistance, without computer assistance, or not done at all.

		With Computer Assistance	Without Computer Assistance	Not Done
261.	Mathematical calculations, such as those used in maintaining a checkbook	○	○	○
262.	Writing letters	○	○	○
263.	Operating small appliances	○	○	○
264.	Scoring student tests	○	○	○
265.	Reporting standarized test scores to parents	○	○	○
266.	Maintaining mailing lists	○	○	○
267.	Retaining student records	○	○	○
268.	Scheduling classes	○	○	○
269.	Scheduling transportation	○	○	○
270.	Performing statistical analyses	○	○	○
271.	Constructing individualized instruction plans (IEP's)	○	○	○
272.	Keeping student grades	○	○	○
273.	Creating student report cards	○	○	○
274.	Operating security system	○	○	○
275.	Operating air conditioning/heating system	○	○	○
276.	Operating lights	○	○	○
277.	Writing payroll checks	○	○	○
278.	Operating a sprinkler (fire prevention or landscape watering) system	○	○	○
279.	Operating a telephone answering system	○	○	○
280.	Labor relations and negotiations	○	○	○
281.	Other ______________________________	○	○	○

282. Which of the following data quality assurance activities have you done or directed someone else to do? Check all that apply:

______Established categories of data to be collected

______Identified indicators or measures for data categories

______Obtained data

______Dealt with missing data

______Changed data into a machine-readable form

______Verified machine data against raw data

______Conducted range check

______Examined summary statistics, such as totals, means and standard deviations

______Other ____

In your school, how often have any of the following computer-related problems occurred in the past year?

		Frequency			
	Problem	Never	1-2 Times	3-5 Times	6+ Times
283.	Intentional equipment damage	○	○	○	○
284.	Equipment theft	○	○	○	○
285.	Intentional destruction of data	○	○	○	○
286.	Unauthorized change of data	○	○	○	○
287.	Theft of data	○	○	○	○
288.	Copying copyrighted programs	○	○	○	○
289.	Theft of passwords	○	○	○	○
290.	Intentional disruption of operating system	○	○	○	○
291.	Student cheating on computer projects	○	○	○	○

292. In the past year, have you been affected by a "computer error" in your school?

______Yes

______No

293. If yes, generally how quickly was the error fixed?

______As soon as it was noticed (i.e., immediately)

______Within one day

______Within one week

______In 1-2 weeks

______In 3-4 weeks

______It has not been fixed

294. If yes, how much did the error cost?

______Don't know

______Less than $50

______$51-$500

______$501-$5,000

______$5,000+

295. In the past year, have you heard any complaints from students, parents, or employees about loss of jobs or curtailment of jobs due to the introduction of computers?

______Yes

______No

296. In the past year, have you heard any student, parent, or employee tell you that they are using a computer in their job?

______Yes

______No

297. Have you ever been required to interact with a computer when you would have preferred to interact with a person (for example, a bank machine teller instead of a human teller)?

______Yes

______No

298. In the past month, how many complaints have you heard from parents, students or school employees regarding computer-related invasion of privacy?

______None

______1-3

______4-10

______11-20

______21+

299. Which of the following actions have you taken because you were concerned about the possibility of having your personal privacy invaded by a computer? Check all that apply:

______Omitting certain information when filling out forms or applications

______Requesting your name be removed from a list

______Declining to provide your social security number

______Complaining to government agencies

______Writing to a legislator

______Writing to the editor of a newspaper or magazine

______Other ____

______I have not taken any such actions

300. Which of the following actions have you taken in your school to protect the privacy of entries on a computerized data base? Check all that apply:

______Restricted or limited the data that was collected or entered into the data base

______Identified individuals by identification number instead of names

______Stored information necessary to link names with ID numbers in a separate location

______Periodically purged data

______Encoded all data

______Restricted physical access to terminals

______Assigned user "log on" ID to restrict access to data

______Encrypted data when transferring from one location to another

______Restricted physical access to data cards, tapes, or disks

______I have not taken any such actions

301. Do you (or any member of your family) have a computer at home?

______Yes

______No

302. If yes, about how many minutes per week do you use it?

______Minutes

If yes, what proportion of the time that you spend using a computer at home is spent in the following ways?

	Computer Use	Proportion of Time
303.	Working alone	0% 25% 50% 75% 100%
304.	Teaching someone	0% 25% 50% 75% 100%
305.	Working together with someone	0% 25% 50% 75% 100%

306. If yes, what proportion of the time that you spend using a computer at home is spent in recreational use (either alone or with others)?

______0%

______25%

______50%

______75%

______100%

QUESTIONS ABOUT UNDERSTANDING COMPUTER-RELATED CONCEPTS AND TERMS

307. Which of the following operating systems have you personally used?

______CP/M

______Apple DOS3.3

______TRSDOS

______MS-DOS or PC-DOS

______Unix

______UCSD-p-system

______Zenix

______VMS

______TSO

______Other ____

______Don't know

______I have not used any operating system

Which of the following data communication equipment or data terminal equipment have you used?

	Used	Not Used	Don't Know
308. Modem	○	○	○
309. Serial (RS232) or Parallel Interface	○	○	○
310. Port	○	○	○
311. Protocol Emulator or Converter	○	○	○

QUESTIONS THAT INVENTORY COMPUTER-RELATED RESOURCES

312. How many computer terminals and microcomputers are made available to students for instructional use in your school building? Do not include computers personally owned by students:

_____Number of single-user microcomputers

_____Number of terminals

_____Total

313. Approximately what percentage of the microcomputers in your school are reserved strictly for teacher use (for classroom management, inservice training, etc.)?

_____0-25% of the microcomputers

_____26-50% of the microcomputers

_____51-75% of the microcomputers

_____76-100% of the microcomputers

Microcomputers are often described in terms of their internal memory capacity, such as "2K" or "16K." What are the approximate numbers of microcomputers of different capacities available to students in your school building?

	Type of Microcomputer	Number
314.	Microcomputers with less than 16K internal memory	____
315.	Microcomputers with 16K-64K internal memory	____
316.	Microcomputers with more than 64K internal memory	____
317.	Microcomputers for which you do not know the internal memory	____
318.	Of all of the above microcomputers, how many have a disk drive?	____
319.	How many have a color monitor?	____
320.	How many have a printer?	____

321. What is the ratio of students to computer/terminals in computer classes at your school?

	Students		Computer
_____	1	to	1
_____	2	to	1
_____	3	to	1
_____	4-6	to	1
_____	7-10	to	1
_____	11-20	to	1
_____	21-30	to	1
_____	Other _______________		

322. What ratio of students to computer/terminals in computer classes would you see meeting student needs in the future?

	Students		Computer
_____	1	to	1
_____	2	to	1
_____	3	to	1
_____	4-6	to	1
_____	7-10	to	1
_____	11-20	to	1
_____	21-30	to	1
_____	Other _______________		
_____	Stay the same		

323. If you have computers in your school, how many different models are you using?

_____Number of models

324. If your school had 32 microcomputers, how would you distribute them?

_____One microcomputer per classroom for 32 classrooms

_____Two microcomputers per classroom for 16 classrooms

_____Four microcomputers in each of 8 classrooms or locations

_____Sixteen microcomputers per classroom for 2 classrooms

_____All microcomputers placed in one location

_____Other ____

325. Approximately how many instructional software packages (simulations, tutorials, drill-and-practice, etc.) are there available for students and teachers to use on microcomputers in your school?

_____None

_____1-10 diskettes full

_____11-20 diskettes full

_____21-50 diskettes full

_____51 or more diskettes full

_____Don't know

326. Do you have a catalog of the computer software that is available in your school?

_____Yes

_____No

_____Don't know

What is the location of the computer terminals or microcomputers that are being used by students in your school? For each location, please indicate approximate quantity and the approximate number of minutes the microcomputers and terminals are regularly available for student use outside of scheduled class activities.

	Location	Approximate No. of Microcomputers and Terminals	Approximate Minutes Available
327.	Classrooms	_____	_____
328.	Library/Media Center	_____	_____
329.	Computer Laboratory/ Center	_____	_____
330.	Department Office	_____	_____
331.	Portable computers within school used in different locations	_____	_____

332. Other, please specify ____

Approximately how much time (in minutes) does a student spend per day using computers for instructional applications during school hours? Include before and after school times when computers are available, but do not include guidance use:

333. Students in computer courses:

_____Average number of minutes

334. Students not in computer courses:

_____Average number of minutes

335. Students in special education classes:

_____Average number of minutes

336. Students in gifted and talented classes:

_____Average number of minutes

337. Approximately what percentage of students in your school use computers at least once a week? Check one:

_____0%
_____1-10%
_____11-20%
_____21-30%
_____31-40%
_____41-50%
_____51-60%
_____61-70%
_____71-80%
_____81-90%
_____91-100%

338. Of students graduating from your school this year, what percentage will have completed a credit-granting course for which the use of a computer (for programming, word processing, simulations, etc.) was a requirement? Do not include uses such as drill-and-practice or career guidance.

_____0%
_____1-10%
_____11-20%
_____21-30%
_____31-40%
_____41-50%
_____51-60%
_____61-70%
_____71-80%
_____81-90%
_____91-100%

Of students graduating from your school this year, approximately what percentage will have received at least 25 hours of instruction in the following languages? Please indicate a percentage for each language:

	Language	Percentage
339.	BASIC	_____
340.	FORTRAN	_____
341.	Pascal	_____
342.	COBOL	_____
343.	RPG	_____
344.	Logo	_____
345.	Pilot	_____
346.	APL	_____

347. Other, please specify ______________________________

During the regular school year, approximately how many students participate regularly in a supervised computer club or regularly come to the computer center as an extracurricular activity?

		Club	Extracurricular Activity
348.	Number of boys	_____	_____
349.	Number of girls	_____	_____
350.	Total number of students	_____	_____

351. At what grade level do students in your school receive their first formal instruction in computer usage? Check one:

_____K

_____1

_____2

_____3

_____4

_____5

_____6

_____7

_____8

_____9

_____10

_____11

_____12

352. Are the computer facilities in your school used by community groups, such as an adult education or continuing education program, to teach participants to use or program computers?

_____Yes, our facilities are used in this way

_____No, our facilities are not used in this way

_____We have no computer facilities

How many different staff members at your school are teaching courses in which computers are used or in which computers are the subject of instruction?

353. _____ Number using computer for teaching and learning (drill-and-practice, tutorial)

354. _____ Number using computer as subject of instruction (introduction to computing, programming, computer science)

355. _____ Number using computer as student tool (word processing, data analysis, laboratory experiments)

356. _____ Number using computer as teacher's aide (record keeping)

Since September 1981, what percentage of the teachers in your school have received training in the use of computers in education? Check one in each column:

	Less than 10 hours (357)	10-15 hours (358)	15-25 hours (359)	More than 25 hours (semester or quarter) (360)
_____ 0%	○	○	○	○
_____ 1-10%	○	○	○	○
_____ 11-20%	○	○	○	○
_____ 21-30%	○	○	○	○
_____ 31-40%	○	○	○	○
_____ 41-50%	○	○	○	○
_____ 51-60%	○	○	○	○
_____ 61-70%	○	○	○	○
_____ 71-80%	○	○	○	○
_____ 81-90%	○	○	○	○
_____ 91-100%	○	○	○	○

361. Which of the following instructional applications of computers are covered by inservice programs offered to staff in your school? Check all that apply:

_____Use of computers in teaching and learning (drill-and-practice, tutorial, simulations and modeling)

_____Computer as the subject of instruction (introduction to computing, computer programming, computer science, data processing)

_____Computer as a student tool (mathematical calculation; data analysis; information gathering, storage and retrieval; guidance applications; word processing)

_____Computer as teacher's aide (developing instructional materials, record keeping)

_____Other, please specify ______________________

_____None

362. What percentage of the teachers in your school would you rate as "highly qualified" to teach about computing (include programming and introduction to computing)?

_____0%

_____1-10%

_____11-20%

_____21-30%

_____31-40%

_____41-50%

_____51-60%

_____61-70%

_____71-80%

_____81-90%

_____91-100%

How many teachers in your school would you rate as highly qualified to teach computer programming in each of the following languages?

363. BASIC _____

364. FORTRAN _____

365. Pascal _____

366. COBOL _____

367. RPG _____

368. Logo _____

369. Pilot _____

370. APL _____

371. Other, please specify ______________________________

372. _____How many different individuals do these numbers represent?

373. How many teachers in your school have certification, a college level major or minor or a master's degree in computer science?

_____Number of teachers

374. How many teachers in your school have a college level major or minor, or a master's degree in computer education?

_____Number of teachers

375. What grade does your school serve?

_____K

_____1

_____2

_____3

_____4

_____5

_____6

_____7

_____8

_____9

_____10

_____11

_____12

376. How many students are enrolled in your school?

_____Number of students

377. How large is the teaching staff in your school?

_____Number of full-time teachers

_____Number of part-time teachers

COMPUTER LITERACY

QUESTIONS FOR TEACHERS

QUESTIONS ABOUT ADMINISTERING COMPUTER-RELATED POLICIES

1. Does your school have written goals for students' computer literacy?

______Yes, in place

______Yes, in progress

______No

______Don't know

2. Which, if any, of the following courses do you teach? Check all that apply:

______Introduction to computing

______Computer science

______Computer programming

______Word processing

______Data processing

______None of these courses

3. How are computers used to support instruction in your school? Check all that apply:

______Used for teaching and learning

______Used for instruction in programming

______Used as a tool in various subjects and courses

______Used for computer-managed instruction

4. In your school are there specific rules that govern any of the following? Check all that apply:

______Protecting equipment from damage

______Protecting equipment from loss

______Destroying another person's data

______Disrupting the operation of the computer

______Scheduling or sharing equipment

______Scheduling or sharing programs

______Copying copyrighted programs

______Copying other student's graded computer work

5. Which of the following are methods or techniques used in your school to assess student's skill and knowledge of computer-related topics? Check all that apply:

______Standardized tests

______Teacher-made tests

______Questionnaires

______Project evaluations

______Teachers' observations

______Others' observations

______Other ____

How influential are the following persons or groups in terms of deciding what computer-related courses are to be offered to students?

		Very Influential	Influential	Not Influential
6.	The Superintendent/School Board	○	○	○
7.	School principals	○	○	○
8.	Computer coordinator/ specialist	○	○	○
9.	Teachers	○	○	○
10.	Parents	○	○	○
11.	Supervisors	○	○	○
12.	Local businesses	○	○	○
13.	Students	○	○	○
14.	Other ____________________	○	○	○

In your district, who is responsible for each of the following activities?

		Superintendent	Assistant Superintendent	Principal	Assistant Principal	Computer Specialist	Curriculum Specialist	Teachers	Students	Consultants	Parents	Other	No One
15.	Deciding what computer-related skills and knowledge are to be learned by students	○	○	○	○	○	○	○	○	○	○	○	○
16.	Determining computer-related course offerings	○	○	○	○	○	○	○	○	○	○	○	○
17.	Establishing budgets for computer-related projects	○	○	○	○	○	○	○	○	○	○	○	○
18.	Planning staff training	○	○	○	○	○	○	○	○	○	○	○	○
19.	Implementing staff training programs	○	○	○	○	○	○	○	○	○	○	○	○
20.	Evaluating and selecting computer hardware	○	○	○	○	○	○	○	○	○	○	○	○
21.	Evaluating and selecting computer software	○	○	○	○	○	○	○	○	○	○	○	○
22.	Determining procurement process	○	○	○	○	○	○	○	○	○	○	○	○
23.	Assigning computer use	○	○	○	○	○	○	○	○	○	○	○	○
24.	Establishing and enforcing rules pertaining to the equitable, ethical and legal use of computers	○	○	○	○	○	○	○	○	○	○	○	○
25.	Evaluating student benefits from computer-related programs	○	○	○	○	○	○	○	○	○	○	○	○
26.	Communicating with parents and school board re course content, fund-raising, etc.	○	○	○	○	○	○	○	○	○	○	○	○

QUESTIONS ABOUT TEACHING WITH OR ABOUT COMPUTERS

27. Do you teach basic concepts about computers and information systems, such as the relationship between memory, central processing unit, and input and output?

______Yes

______No

28. Do you teach how to develop computer-oriented algorithms and procedures?

______Yes

______No

29. Which of the following subject areas do you teach? Check all that apply:

______Art/Graphic Arts
______Business Education
______Computer Programming
______Computer Science
______English/Language Arts
______Foreign Languages
______Health
______Home Economics
______Industrial Arts
______Introduction to Computing
______Mathematics
______Music
______Performing Arts
______Physical Education
______Science
______Social Studies/Social Science

30. In which of the following subject areas do you teach your students how computers can be used to solve problems? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

31. Do you teach about the social implications of computer use, such as job displacement or new job opportunities, dehumanization or better communications, dependency or increased productivity?

______Yes

______No

32. Do you teach about ethical issues related to computer use, such as privacy of data, copyright infractions or electronic theft?

______Yes

______No

33. Do you teach about the general capabilities and limitations of computer use?

______Yes

______No

34. Do you teach about the capabilities and limitations of the particular computer applications you use in class?

______Yes

______No

______I don't use computer applications in class

35. In which of the following computer languages do you teach programming skills? Check all that apply:

______I don't teach programming skills

______APL

______Assembly Language

______BASIC

______COBOL

______FORTRAN

______Logo

______Pascal

______Pilot

______RPG

______Other

36. How often do you use a computer as an aid when you are presenting or demonstrating concepts?

______Never

______Rarely

______Monthly

______Weekly

______Daily

37. For which of the following classroom recordkeeping activities do you use a computer as an aid? Check all that apply:

______Attendance

______Grades

______Schedules

______Monitoring instructional progress

______Individual Educational Plans (IEP's)

______Standardized test scores

______Other ______________________________________

Listed below are some ways teachers use or teach about computers. Please check those activities that currently take place in your school and those activities that are being planned for your school.

Use	Computer Activity	Current Use	Future Plans	Don't Know
38.	For numerical calculations	○	○	○
39.	To run simulations	○	○	○
40.	For instructional games	○	○	○
41.	As leisure time activity and reward	○	○	○
42.	For student problem solving	○	○	○
43.	For drill-and-practice	○	○	○
44.	As a tutor (teach content)	○	○	○
45.	To demonstrate concepts	○	○	○
46.	To score tests	○	○	○
47.	As an instructional management aid	○	○	○
48.	As a material generator (tests or worksheets)	○	○	○
49.	For information retrieval	○	○	○
50.	For student analysis of data	○	○	○
51.	For word processing	○	○	○
52.	For special needs students	○	○	○
53.	To control laboratory equipment	○	○	○
Teach				
54.	To teach programming	○	○	○
55.	To teach computer operation	○	○	○
56.	To teach data processing	○	○	○
57.	To teach hardware & software procedures	○	○	○
58.	To teach history of computers	○	○	○
59.	To teach how computers are applied	○	○	○
60.	To teach about computer careers	○	○	○
61.	To teach about the role and impact of computers in society	○	○	○
62.	To teach problem solving	○	○	○

63. Other, please specify ______________________________

From your experience with using computers in teaching and learning, which of the following have you found to be a disadvantage?

		A Dis-Advantage	Not a Dis-Advantage
64.	Lack of access to terminals or microcomputers	○	○
65.	Lack of student interest	○	○
66.	Low quality of educational software	○	○
67.	Reallocation of funds to computers from more pressing needs	○	○
68.	Difficulty with integrating computer-taught skills with the remainder of the curriculum	○	○
69.	Difficulty with managing student use of computers	○	○
70.	Lack of teacher or staff training	○	○
71.	Lack of teacher or staff interest	○	○
72.	Lack of administrative support	○	○

From your experience with using computers in teaching and learning, which of the following have you found to be an advantage?

		An Advantage	Not an Advantage
73.	Providing immediate feedback	○	○
74.	Having great patience	○	○
75.	Keeping the learner actively involved	○	○
76.	Providing self-paced instruction	○	○
77.	Keeping records of student performance	○	○
78.	Providing, through simulations, experiences otherwise not possible in the classroom	○	○

79. Which of the following sources of information about computing do you use at least once a month? Check all that apply:

______Newspaper articles

______Weekly computer periodicals (such as Infoworld)

______General computer periodicals (such as Popular Computing, BYTE magazine, Consumer Report)

______Educational computing periodicals (such as Electronic Learning, Classroom Computer Learning, The Computing Teacher, THE Journal)

______Professional periodicals (such as Math Teacher, AEDS Monitor)

______Software catalogs

______Regional teacher training centers

______Colleagues and friends

______Formal classes or workshops, including inservice

______"User" or other professional groups

______Electronic data services (such as The Source, Compuserve, EDUNET)

______Magazines delivered on electronic media

______Television/radio

______Other ______________________________

80. Do you belong to a computer teacher organization that shares resources?

______Yes

______No

81. If yes which type of organization do you belong to? Check all that apply:

______National organization of teachers whose major purpose is using computers

______State organization of teachers whose major purpose is using computers

______Local organization of teachers whose major purpose is using computers

______Local informal network or user group

______Computer special interest group in educational organization

______Education special interest group in computer organization

______Other ______________________________________

82. In which subject areas have you looked for and been unable to find adequate software? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

83. From the list of computer-related curricular materials below, select the three that you most need (that is, appropriate materials that are not now available to you).

______Answer Sheets
______Curriculum guides
______Curriculum outlines
______Data Bases
______Films
______Laboratory equipment and supplies
______Overheads
______Periodicals
______Problem sets
______Other ______________
______Reference books
______Slides
______Software
______Teacher guides
______Tests
______Textbooks
______Video discs
______Video tapes
______Workbooks

QUESTIONS ABOUT USING COMPUTER PROGRAMS

84. What types of computer-related courses or workshops have you taken since September 1981? Check all that apply:

______Learning a programming language (such as Pascal, Logo, or BASIC)

______Learning word processing

______Learning computer science

______Learning research applications

______Learning data processing

______Learning business applications

______A general introduction to computing course

______Learning about computer software

______Learning about computer hardware

______Learning authoring languages

______Other, please specify ____________________________

______None

85. Where have you received any computer training? Check all that apply:

______University

______College

______Vocational-Technical School

______Community College

______Community Education Program

______District Inservice Program

______Educational Computer Consortium

______Regional support or training center

______Computer store

______Computer camp

______Industry

______My training has been self-taught

______I have not received any computer training

______Other ____

86. Are you getting the training you need for your use of computer in teaching?

______Yes

______No

87. If No, which three of the following courses or workshops would you most want to take to help you use computers in teaching? Check three only from the following list of 34 options:

Introduction to Computers in Education

______Computer-managed Instruction

______Software evaluation

______Courseware development

______Hardware evaluation

Computer Science

______Advanced programming

______Artificial intelligence

______Data structures and algorithms

______File processing

______Information retrieval

______Introduction to Computer Science

______Modeling and simulation

______Survey of programming languages

Computer Applications in Subject Areas

______Art/Graphic Arts

______Business Education

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/ Social Science

Computer Software Packages

______Accounting

______Communications

______Data bases

______Gradebooks

______Graphics

______Simulations

______Spreadsheets

______Statistical analysis

______Word processing

Which of the following computer resources are available in your school?

		Available	Not Available	Don't Know
88.	Card punch	○	○	○
89.	Card reader	○	○	○
90.	Color monitor	○	○	○
91.	CRT or other video monitor	○	○	○
92.	Floppy disk drive	○	○	○
93.	Graphics plotter	○	○	○
94.	Graphics tablet	○	○	○
95.	Hard disk drive	○	○	○
96.	Joystick or game paddle	○	○	○
97.	Light pen	○	○	○
98.	Magazines	○	○	○
99.	Magnetic tape drive, including cassette	○	○	○
100.	Mainframe computer	○	○	○
101.	Microcomputer	○	○	○
102.	"Mouse"	○	○	○
103.	Music board	○	○	○
104.	Optical scanner	○	○	○
105.	Paper tape punch	○	○	○
106.	Paper tape reader	○	○	○
107.	Parallel or serial interface	○	○	○
108.	Persons to assist	○	○	○
109.	Printer	○	○	○
110.	Reference books and manuals	○	○	○
111.	Telephone modem	○	○	○
112.	Textbooks	○	○	○
113.	Voice synthesizer	○	○	○

114. Other ____

Which of the following computer devices have you personally used or operated?

		Used	Not Not Used	Don't Know
115.	Card punch	○	○	○
116.	Card reader	○	○	○
117.	Color monitor	○	○	○
118.	CRT or other video monitor	○	○	○
119.	Floppy disk drive	○	○	○
120.	Graphics plotter	○	○	○
121.	Graphics tablet	○	○	○
122.	Hard disk drive	○	○	○
123.	Joystick or game paddle	○	○	○
124.	Light pen	○	○	○
125.	Magnetic tape drive, including cassette	○	○	○
126.	Mainframe computer	○	○	○
127.	Microcomputer	○	○	○
128.	"Mouse"	○	○	○
129.	Music board	○	○	○
130.	Optical scanner	○	○	○
131.	Paper tape punch	○	○	○
132.	Paper tape reader	○	○	○
133.	Parallel or serial interface	○	○	○
134.	Printer	○	○	○
135.	Telephone modem	○	○	○
136.	Voice synthesizer	○	○	○

137. Other ____

138. ______I have not used any of these devices

How often do you personally use the following resources when you need information regarding how to use a computer?

		Often	Sometimes	Never
139.	Manuals supplied by the hardware company or publishers	○	○	○
140.	Technical assistance from the vendor	○	○	○
141.	School or district-level technical assistance	○	○	○
142.	"Users" group	○	○	○
143.	Tutorial programs	○	○	○
144.	Friends/colleagues/family	○	○	○
145.	Reference books	○	○	○
146.	Independent technical assistance	○	○	○
147.	Professional periodicals	○	○	○
148.	Commercial periodicals	○	○	○
149.	Local professional organizations	○	○	○

How adequate are the following materials or resources for teaching about computers and computing?

		Not Available	Available But Inadequate	Available and Adequate
150.	Text books	○	○	○
151.	Teacher guides	○	○	○
152.	Films or filmstrips	○	○	○
153.	Video tapes	○	○	○
154.	Video discs	○	○	○
155.	Workbooks	○	○	○
156.	Curriculum guides	○	○	○
157.	Software	○	○	○
158.	Overheads	○	○	○
159.	Periodicals	○	○	○

When initially considering "packaged" computer programs, how important are each of the following?

		Very Important	Important	Not Important
160.	The reputation of the program	○	○	○
161.	The purpose of the program	○	○	○
162.	The data needed to use the program	○	○	○
163.	The equipment needed to run the program	○	○	○
164.	The "user-friendliness" or ease of use of the materials	○	○	○
165.	The author or source of the program	○	○	○
166.	Length or complexity of the documentation	○	○	○
167.	Completeness	○	○	○

168. Other, please specify ____

169. ______I do not evaluate computer programs

170. Given the computer hardware in your school, which of the following kinds of programs are available for you personally to use? Check all that apply:

______Simulations

______Business programs (e.g., spreadsheets)

______Math or statistics computation

______Text editing or word processing

______Tutorial programs

______Drill-and-practice programs

______Data base or file management programs

______Graphics programs

______Authoring language programs

______Telecommunication programs

______Compilers

______Recreational programs

______System utilities

171. How many single-user microcomputers or computer terminals do you have in your classroom?

______Number of single-user microcomputers

______Number of terminals

______Total

172. Outside of your classroom how many microcomputers or computer terminals do your students have access to in your school?

______Number of single-user microcomputers

______Number of terminals

______Total

173. Which of the following changes have occurred as a result of your use of computers in class?

______Content of courses

______Grouping of students

______Pacing of instruction

______Pedagogical technique

______Time for individual attention

______I do not use computers in class

______There have been no changes

174. Where do you have access to a computer outside of school? Check all that apply:

______I do not have access to a computer outside of school

______At home

______At a friend's home

______At someone's place of work

______At a college or university

______At a library

______Other, please specify ______________________________

Where have you used the following kinds of programs or software packages?

		School	Home	Not Used
175.	Accounting	○	○	○
176.	Authoring	○	○	○
177.	Business	○	○	○
178.	Communications	○	○	○
179.	Computational	○	○	○
180.	Data base management	○	○	○
181.	Educational	○	○	○
182.	Graphics	○	○	○
183.	Home management	○	○	○
184.	Integrated packages	○	○	○
185.	Recreation	○	○	○
186.	Simulations	○	○	○
187.	Spreadsheets	○	○	○
188.	Statistical analysis	○	○	○
189.	Telecommunications	○	○	○
190.	Utility	○	○	○
191.	Word processing	○	○	○

192. Which of the following sets of keys on a keyboard can you personally operate by "touch" typing? Check all that apply:

______Alphabetic

______Numeric

______Function (For example, "enter" or "return")

______None

193. How often do you personally use a word processing program or a computer dedicated to word processing?

______Never

______Rarely

______Monthly

______Weekly

______Daily

194. How long have you personally been using a word processing program or a dedicated word processor (not necessarily the same program or computer)?

______I have not used a word processing program

______Less than one month

______Two to four months

______Five months to a year

______13-24 months

______More than 2 years

195. For which of the following types of documents do you personally use a word processing program or a computer dedicated to word processing? Check all that apply:

______Memoranda

______Letters

______Short reports or compositions (up to 19 pages)

______Long reports or compositions (20 or more pages)

______Other ____

______Not applicable

Which of the following outputs from a computer program have you produced or had produced for making decisions or solving problems?

		Produced	Have Not Produced	Don't Know
196.	Spreadsheets	○	○	○
197.	Charts and tables	○	○	○
198.	Graphs	○	○	○
199.	Drawings	○	○	○

200. ______I have not produced any of these outputs

201. To which of the following uses in the arts have you put a computer? Check all that apply:

______In graphic art expression

______In musical expression

______For creative writing

______For choreography

______Other ______________________________

202. Computers are frequently used to access data bases. Which of the following types of data bases have you personally accessed? Check all that apply:

______I have not accessed any data bases

______Career information

______Bibliographical citations (library)

______Stock market

______School or district data (personnel, budget, inventory, etc.)

______Student records

______National press wire service

______Electronic bulletin board

______Computer courseware or other educational resources

______Recreational programs

______Other ____

203. For which of the following subject areas have you used a computer for teaching and learning? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

204. For which of the following subject areas have you used a computer program for teaching and learning that you, yourself, wrote? Check all that apply:

______Art/Graphic Arts
______Business Education
______Computer Programming
______Computer Science
______English/Language Arts
______Foreign Languages
______Health
______Home Economics
______Industrial Arts
______Introduction to Computing
______Mathematics
______Music
______Performing Arts
______Physical Education
______Science
______Social Studies/Social Science

205. For which of the following subject areas have you used a simulation program in teaching? Check all that apply:

______Art/Graphic Arts
______Business Education
______Computer Programming
______Computer Science
______English/Language Arts
______Foreign Languages
______Health
______Home Economics
______Industrial Arts
______Introduction to Computing
______Mathematics
______Music
______Performing Arts
______Physical Education
______Science
______Social Studies/Social Science

206. For which of the following subject areas have you used a computerized information retrieval system (a computer data base) as an aid for an activity such as preparing curriculum, writing a paper, preparing a science project? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

QUESTIONS ABOUT DEVELOPING COMPUTER PROGRAMS

207. Which of the following activities have you, yourself, performed with a computer? Check all that apply:

______I have not done any of these activities

______Loaded a program into memory

______Saved a program on a disk, tape, or cards

______Named or renamed a program file

______Listed a program

______Backed up a copy of a program or file

______Deleted a program from disk or tape

______Erased computer memory

______Accessed a catalog or menu of saved programs

______Run a program

______Tested and debugged a program

208. In which of the following languages have you written a program? Check all that apply:

______I have not written a program

______APL

______Assembly Language

______BASIC

______COBOL

______Other ____________________

______FORTRAN

______Logo

______Pascal

______Pilot

______RPG

209. What was the length, in lines, of the longest program you have written?

______0, I have not written a program

______1-10 lines or 1 procedure

______11-25 lines or 2-3 procedures

______26-50 lines or 4-10 procedures

______51-100 lines or 11-20 procedures

______101 or more lines or 21 or more procedures

210. What is the longest program--written by someone else--that you have personally modified, edited, or changed in some way so that it would perform a different task?

______I have never changed a program

______1-20 lines (approximately 1 screen)

______21-40 lines (approximately 2 screens)

______40 or more lines

211. Have you, yourself, written a computer program containing any of the following elements? Check all that apply:

______I have not written a program

______Repetition or iteration

______Conditional decisions ("if, then")

______Use of variables

______Logical operations

______Arithmetic operations

______Sound output

______Graphical output

______Using arrays

______Using data files

______Statements for accepting input from keyboard or other peripheral device

______Format statements or image strings for outputting information on video display, printer or other peripheral device

212. Which of the following sources of inaccuracies in a program output have you experienced? Check all that apply:

______The input data was inaccurate ("Garbage in/garbage out")

______The program "rounded off" inappropriately

______There was a logical error in the program

______The input data was called from the wrong memory location (wrong field, wrong variable, etc.)

______The program was inappropriate for the problem

______Other, please specify ______________________________

______None

213. In which of the following subject areas have you worked with a problem that required organizing a large amount of data?

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

214. Which of the following aspects of algorithm development do you teach? Check all that apply:

______I don't teach any of these

______Hand simulation of an algorithm

______Ability to recognize basic algorithms (e.g., sorting, searching, making lists of things, repeating a task until a goal is reached)

______Algorithm testing by "Worst Case" inputs

______Design of a set of test data

______Determine how many arithmetic computations it will take to complete the algorithm

______Relative efficiency of different algorithms to solve the same problem

______Not applicable

215. Which of the following aspects of algorithm designs do you teach? Check all that apply:

______Flowcharts or other diagrams of algorithms

______English (or other) "pseudocode" for planning

______The concept of subtasks or procedures

______Top down design ("Consider the whole first, then details.")

______Treatment of error conditions (e.g., bad input data).

216. Do you use a textbook that shows how to develop algorithms?

______Yes

______No

______Don't know

217. Do you teach students to use a text or reference book to look up algorithms?

______Yes

______No

______Don't know

218. Do a majority of your computer programming students write at least one complete user's guide (of any kind) during their school careers?

______Yes

______No

______Don't know

______Not applicable

219. Which of the following aspects of documentation and technical writing do you teach? Check all that apply:

_____Preparation of outlines before writing

_____Teacher approval of outlines before writing

_____Standard components of reference material (tutorial, component summaries, errors, glossary, index, etc.)

_____Use of word processing system to prepare drafts of a document

_____Peer review of documents

_____Rewriting and second review by teacher or peers

_____Not applicable

220. Which of the following practices for debugging and testing of programs do you teach? Check all that apply:

_____Testing of small pieces of a program before it is all put together and tried.

_____Testing a program by putting in the largest, smallest, and most troublesome inputs.

_____Using "debugging" PRINT or output commands in your programs to see where execution is proceeding and what values are in the variables.

_____When a real mystery occurs, dividing the program in pieces with output commands, and successively narrowing the problem location until the error is found ("Divide and conquer").

_____Performance testing of programs: Measure the time or memory required to process various amounts of data.

QUESTIONS ABOUT ANALYZING COMPUTER APPLICATIONS

Many schools use computers for recording and accessing data about students and staff. Please answer the following four questions if your school uses computers for this purpose. Check all that apply:

221. Who uses the computer:

______Principal

______Teachers

______Special computer personnel

______Guidance counselors

______Secretaries, Clerks

______Students

______Other ______________________________________

222. What types of information are maintained in the computer system about students?

______Classes requested

______Classes enrolled

______Grades received

______Homeroom assignment

______Standard test scores

______Honors

______School enrolled

______Personal profile

______Attendance

______Class schedule

______Residence

______Age (Birth date)

______Telephone number

______Other ________________

223. What types of information are maintained in the computer system about staff?

______Salary

______Residence

______Years of service

______Educational attainment

______Current grade level of classes

______Subject areas of current classes

______School

______Certification status

______Other ________________

224. What sorts of summary information do you retrieve or generate from the student record system at your school?

______Course enrollments

______Student schedules

______School or district standardized test score summaries

______Bussing schedules and routes

______Attendance records

______Room/building utilization

______Grade point averages

______Class ranks

______Other ____

225. Which of the following groups utilize computer generated reports in your school?

______Administrative personnel

______Instructional personnel

______Students

______Parents

226. Before deciding to use a computer, people frequently consider factors that might argue against computer use. Which of the following have you considered? Check all that apply:

______Equipment acquisition costs

______Equipment-related costs

______Equipment availability (accessibility)

______Hardware maintenance

______Software maintenance

______Software acquisition costs

______Software-related costs

______Software availability/accessibility/quality

______Equipment capacity (memory)

______Equipment capacity (CPU)

______Textbook availability

______Data gathering costs

______Data storage costs

______Data entry costs

______Programming costs

______Output capabilities

______Other ____

QUESTIONS ABOUT UNDERSTANDING SOCIAL ISSUES RELATED TO COMPUTERS

The following administrative tasks may be completed by you, personally, by a member of your staff, or by an outside contractor. Please indicate, for each task, whether the task is completed with computer assistance, without computer assistance, or not done at all.

		With Computer Assistance	Without Computer Assistance	Not Done
227.	Mathematical calculations, such as those used in maintaining a checkbook	○	○	○
228.	Writing letters	○	○	○
229.	Operating small appliances	○	○	○
230.	Scoring student tests	○	○	○
231.	Reporting standarized test scores to parents	○	○	○
232.	Maintaining mailing lists	○	○	○
233.	Retaining student records	○	○	○
234.	Scheduling classes	○	○	○
235.	Scheduling transportation	○	○	○
236.	Performing statistical analyses	○	○	○
237.	Constructing individualized instruction plans (IEP's)	○	○	○
238.	Keeping student grades	○	○	○
239.	Creating student report cards	○	○	○
240.	Operating security system	○	○	○
241.	Operating air conditioning/heating system	○	○	○
242.	Operating lights	○	○	○
243.	Writing payroll checks	○	○	○
244.	Operating a sprinkler (fire prevention or landscape watering) system	○	○	○
245.	Operating a telephone answering system	○	○	○
246.	Labor relations and negotiations	○	○	○
247.	Other ____________________	○	○	○

248. Which of the following data quality assurance activities have you done or directed someone else to do? Check all that apply:

______Established categories of data to be collected

______Identified indicators or measures for data categories

______Obtained data

______Dealt with missing data

______Changed data into a machine-readable form

______Verified machine data against raw data

______Conducted range check

______Examined summary statistics, such as totals, means and standard deviations

______Other ______________________________

In your school, how often have any of the following computer-related problems occurred in the past year?

	Problem	Never	1-2 Times	3-5 Times	6+ Times
249.	Intentional equipment damage	○	○	○	○
250.	Equipment theft	○	○	○	○
251.	Intentional destruction of data	○	○	○	○
252.	Unauthorized change of data	○	○	○	○
253.	Theft of data	○	○	○	○
254.	Copying copyrighted programs	○	○	○	○
255.	Theft of passwords	○	○	○	○
256.	Intentional disruption of operating system	○	○	○	○
257.	Student cheating on computer projects	○	○	○	○

258. In the past year, have you been affected by a "computer error" in your school?

______Yes

______No

259. If yes, generally how quickly was the error fixed?

______As soon as it was noticed (i.e., immediately)

______Within one day

______Within one week

______In 1-2 weeks

______In 3-4 weeks

______It has not been fixed

260. If yes, how much did the error cost?

______Don't know

______Less than $50

______$51 - $500

______$501 - $5,000

______$5,000+

261. In the past month, have you heard any complaints from students or parents about loss of jobs or curtailment of jobs due to the introduction of computers?

______Yes

______No

262. In the past month, have you heard any students or parents tell you that they are using a computer in their job?

______Yes

______No

263. Have you ever been required to interact with a computer when you would have preferred to interact with a person (for example, a bank machine teller instead of a human teller)?

______Yes

______No

264. In the past month, how many complaints have you received from parents or students regarding computer-related invasion of privacy?

______None

______1-3

______4-10

______11-20

______21+

265. Which of the following actions have you taken because you were concerned about the possibility of having your personal privacy invaded by a computer? Check all that apply:

______Omitting certain information when filling out forms or applications

______Requesting your name be removed from a list

______Declining to provide your social security number

______Complaining to government agencies

______Writing to a legislator

______Writing to the editor of a newspaper or magazine

______Other ____

______I have not taken any such actions

266. Which of the following actions have you taken in your school to protect the privacy of entries on a computerized data base? Check all that apply:

______Restricted or limited the data that was collected or entered into the data base

______Identified individuals by identification number instead of names

______Stored information necessary to link names with ID numbers in a separate location

______Periodically purged data

______Encoded all data

______Restricted physical access to terminals

______Assigned user "log on" ID to restrict access to data

______Encrypted data when transferring from one location to another

______Restricted physical access to data cards, tapes, or disks

______I have not taken any such actions

267. Do you (or any member of your family) have a computer at home?

______Yes

______No

268. If yes, about how many minutes per week do you use it?

______Minutes

If yes, what proportion of the time that you spend using a computer at home is spent in the following ways?

	Computer Use	Proportion of Time
269.	Working alone	0% 25% 50% 75% 100%
270.	Teaching someone	0% 25% 50% 75% 100%
271.	Working together with someone	0% 25% 50% 75% 100%

272. If yes, what proportion of the time that you spend using a computer at home is spent in recreational use (either alone or with others)?

______0%

______25%

______50%

______75%

______100%

QUESTIONS ABOUT UNDERSTANDING COMPUTER-RELATED CONCEPTS AND TERMS

273. Which of the following operating systems have you personally used?

______CP/M

______Apple DOS3.3

______TRSDOS

______MS-DOS or PC-DOS

______Unix

______UCSD-p-system

______Zenix

______VMS

______TSO

______Other ____

______Don't know

______I have not used any operating system

Which of the following data communication equipment or data terminal equipment have you used?

		Used	Not Used	Don't Know
274.	Modem	○	○	○
275.	Serial (RS232) or Parallel Interface	○	○	○
276.	Port	○	○	○
277.	Protocol Emulator or Converter	○	○	○

278. Do you teach about how computers' speeds compare to non-computer methods for the same jobs?

______Yes

______No

______Don't know

279. Do you teach about approximately how long (a minute? an hour? a week?) it would take a personal computer (such as an Apple II) or a large business-type computer (such as an IBM 370) to sort a thousand names alphabetically?

______Yes

______No

______Don't know

280. Do you teach about what things computer speed depends upon besides the choice of physical computing hardware (e.g., choice of sorting algorithm, language in which the algorithm is expressed)?

______Yes

______No

______Don't know

281. Do you teach about the relationship among the internal memory, central processing unit, input/output devices, and mass storage devices, and describe the flow of information and control?

______Yes

______No

______Don't know

282. Which of the following items do you teach students so thoroughly that they can produce a sentence or paragraph explaining the term in relation to other given terms? Check all that apply:

______Algorithm

______Artificial intelligence

______Assembler

______Batch processing

______Central processing unit

______Compiler

______Computer-aided design

______Computer-aided manufacturing

______Computer operator

______Computer programmer

______CRT terminal

______Data base

______Data entry clerk

______Data processing

______Disk drive

______Higher level language

______Information retrieval

______Internal memory

______Interpreter

______Machine language

______Merging files

______Modeling and simulation

______Modem

______Operation system

______Pattern recognition

______RAM

______ROM

______Searching files

______Sorting files

______System analyst

______Tape drive

______Time sharing

______Updating files

QUESTIONS THAT INVENTORY COMPUTER-RELATED RESOURCES

283. Approximately how many instructional software packages (simulations, tutorials, drill-and-practice, etc.) are available for students and teachers to use on microcomputers in your school?

_____None

_____1-10 diskettes full

_____11-20 diskettes full

_____21-50 diskettes full

_____51 or more diskettes full

_____Don't know

284. If you wanted to use software packages or computer-related materials in your classroom, where would you most likely to get them? Check all that apply:

_____State library or software catalog or clearinghouse

_____County library

_____District library

_____School library

_____Informal liaison with other teachers

_____Other ____

_____I have all the software and materials I need in my classroom

_____Not applicable

COMPUTER LITERACY

QUESTIONS FOR STUDENTS

QUESTIONS ABOUT ADMINISTERING COMPUTER-RELATED POLICIES

1. In your school, are there specific rules that govern any of the following? Check all that apply:

______Protecting equipment from damage

______Protecting equipment from loss

______Destroying another person's data

______Disrupting the operation of the computer

______Scheduling or sharing equipment

______Scheduling or sharing programs

______Copying copyrighted programs

______Copying other students' graded computer work

QUESTIONS ABOUT TEACHING WITH OR ABOUT COMPUTERS

2. How often do you use a computer as an aid when you are presenting or demonstrating concepts?

_______Never

_______Rarely

_______Monthly

_______Weekly

_______Daily

Listed below are some ways teachers use or teach about computers. Please check those activities that currently take place in your school and those activities that are being planned for your school.

Use	Computer Activity	Current Use	Future Plans	Don't Know
3.	For numerical calculations	○	○	○
4.	To run simulations	○	○	○
5.	For instructional games	○	○	○
6.	As leisure time activity and reward	○	○	○
7.	For student problem solving	○	○	○
8.	For drill-and-practice	○	○	○
9.	As a tutor (teach content)	○	○	○
10.	To demonstrate concepts	○	○	○
11.	To score tests	○	○	○
12.	As an instructional management aid	○	○	○
13.	As a material generator (tests or worksheets)	○	○	○
14.	For information retrieval	○	○	○
15.	For student analysis of data	○	○	○
16.	For word processing	○	○	○
17.	For special needs students	○	○	○
18.	To control laboratory equipment	○	○	○
Teach				
19.	To teach programming	○	○	○
20.	To teach computer operation	○	○	○
21.	To teach data processing	○	○	○
22.	To teach hardware & software procedures	○	○	○
23.	To teach history of computers	○	○	○
24.	To teach how computers are applied	○	○	○
25.	To teach about computer careers	○	○	○
26.	To teach about the role and impact of computers in society	○	○	○
27.	To teach problem solving	○	○	○

28. Other, please specify ______________________________

From your experience with using computers in teaching and learning, which of the following have you found to be a disadvantage?

		A Disadvantage	Not a Disadvantage
29.	Lack of access to terminals or microcomputers	○	○
30.	Lack of student interest	○	○
31.	Low quality of educational software	○	○
32.	Reallocation of funds to computers from more pressing needs	○	○
33.	Difficulty with integrating computer-taught skills with the remainder of the curriculum	○	○
34.	Difficulty with managing student use of computers	○	○
35.	Lack of teacher or staff training	○	○
36.	Lack of teacher or staff interest	○	○
37.	Lack of administrative support	○	○

From your experience with using computers in teaching and learning, which of the following have you found to be an advantage?

		An advantage	Not an advantage
38.	Providing immediate feedback	○	○
39.	Having great patience	○	○
40.	Keeping the learner actively involved	○	○
41.	Providing self-paced instruction	○	○
42.	Keeping records of student performance	○	○
43.	Providing, through simulations, experiences otherwise not possible in the classroom	○	○

QUESTIONS ABOUT USING COMPUTER PROGRAMS

44. What types of computer-related courses or workshops have you taken since September 1981? Check all that apply:

______Learning a programming language (such as Pascal, Logo, or BASIC)

______Learning word processing

______Learning computer science

______Learning research applications

______Learning data processing

______Learning business applications

______A general introduction to computing course

______Learning about computer software

______Learning about computer hardware

______Learning authoring languages

______Other, please specify ______________________________

______None

Which of the following computer resources are available in your school?

		Available	Not Available	Don't Know
45.	Card punch	○	○	○
46.	Card reader	○	○	○
47.	Color monitor	○	○	○
48.	CRT or other video monitor	○	○	○
49.	Floppy disk drive	○	○	○
50.	Graphics plotter	○	○	○
51.	Graphics tablet	○	○	○
52.	Hard disk drive	○	○	○
53.	Joystick or game paddle	○	○	○
54.	Light pen	○	○	○
55.	Magazines	○	○	○
56.	Magnetic tape drive, including cassette	○	○	○
57.	Mainframe computer	○	○	○
58.	Microcomputer	○	○	○
59.	"Mouse"	○	○	○
60.	Music board	○	○	○
61.	Optical scanner	○	○	○
62.	Paper tape punch	○	○	○
63.	Paper tape reader	○	○	○
64.	Parallel or serial interface	○	○	○
65.	Persons to assist	○	○	○
66.	Printer	○	○	○
67.	Reference books and manuals	○	○	○
68.	Telephone modem	○	○	○
69.	Textbooks	○	○	○
70.	Voice synthesizer	○	○	○

71. Other ______________________________

Which of the following computer devices have you personally used or operated?

		Used	Not Used	Don't Know
72.	Card punch	○	○	○
73.	Card reader	○	○	○
74.	Color monitor	○	○	○
75.	CRT or other video monitor	○	○	○
76.	Floppy disk drive	○	○	○
77.	Graphics plotter	○	○	○
78.	Graphics tablet	○	○	○
79.	Hard disk drive	○	○	○
80.	Joystick or game paddle	○	○	○
81.	Light pen	○	○	○
82.	Magnetic tape drive, including cassette	○	○	○
83.	Mainframe computer	○	○	○
84.	Microcomputer	○	○	○
85.	"Mouse"	○	○	○
86.	Music board	○	○	○
87.	Optical scanner	○	○	○
88.	Paper tape punch	○	○	○
89.	Paper tape reader	○	○	○
90.	Parallel or serial interface	○	○	○
91.	Printer	○	○	○
92.	Telephone modem	○	○	○
93.	Voice synthesizer	○	○	○

94. Other ____

95. ______I have not used any of these devices

How often do you personally use the following resources when you need information regarding how to use a computer?

		Often	Sometimes	Never
96.	Manuals supplied by the hardware company or publishers	○	○	○
97.	Technical assistance from the vendor	○	○	○
98.	School or district-level technical assistance	○	○	○
99.	"Users" group	○	○	○
100.	Tutorial programs	○	○	○
101.	Friends/colleagues/family	○	○	○
102.	Reference books	○	○	○
103.	Independent technical assistance	○	○	○
104.	Professional periodicals	○	○	○
105.	Commericial periodicals	○	○	○
106.	Local professional organizations	○	○	○

When initially considering "packaged" computer programs, how important are each of the following?

		Very Important	Important	Not Important
107.	The reputation of the program	○	○	○
108.	The purpose of the program	○	○	○
109.	The data needed to use the program	○	○	○
110.	The equipment needed to run the program	○	○	○
111.	The "user-friendliness" or ease of use of the materials	○	○	○
112.	The author or source of the program	○	○	○
113.	Length or complexity of the documentation	○	○	○
114.	Completeness	○	○	○

115. Other, please specify ______________________________________

116. ______I do not evaluate computer programs

117. Given the computer hardware in your school, which of the following kinds of programs are available for you personally to use? Check all that apply:

_____Simulations

_____Business programs (e.g., spreadsheets)

_____Math or statistics computation

_____Text editing or word processing

_____Tutorial programs

_____Drill-and-practice programs

_____Data base or file management programs

_____Graphics programs

_____Authoring language programs

_____Telecommunication programs

_____Compilers

_____Recreational programs

_____System utilities

118. How many single-user microcomputers or computer terminals do you have in your classroom?

_____Number of single-user microcomputers

_____Number of terminals

_____Total

119. Outside of your classroom, how many microcomputers or computer terminals can you use in your school?

_____Number of microcomputers

_____Number of terminals

_____Total

120. During the school year, when have you used the computers in your school? Check all that apply:

_____During scheduled class time

_____Before school or after school

_____In free periods

_____On weekends, holidays, etc.

121. Where do you have access to a computer outside of school? Check all that apply:

_____I do not have access to a computer outside of school

_____At home

_____At a friend's home

_____At someone's place of work

_____At a college or university

_____At a library

_____Other, please specify ______________________________

Where have you used the following kinds of programs or software packages?

		School	Home	Not Used
122.	Accounting	○	○	○
123.	Authoring	○	○	○
124.	Business	○	○	○
125.	Communications	○	○	○
126.	Computational	○	○	○
127.	Data base management	○	○	○
128.	Educational	○	○	○
129.	Graphics	○	○	○
130.	Home management	○	○	○
131.	Integrated packages	○	○	○
132.	Recreation	○	○	○
133.	Simulations	○	○	○
134.	Spreadsheets	○	○	○
135.	Statistical analysis	○	○	○
136.	Telecommunications	○	○	○
137.	Utility	○	○	○
138.	Word processing	○	○	○

139. Which of the following sets of keys on a keyboard can you personally operate by "touch" typing? Check all that apply:

_____Alphabetic

_____Numeric

_____Function (for example, "enter" or "return")

_____None

140. How often do you personally use a word processing program or a computer dedicated to word processing?

_____Never

_____Rarely

_____Monthly

_____Weekly

_____Daily

141. How long have you personally been using a word processing program or a dedicated word processor (not necessarily the same program or computer)?

_____I have not used a word processing program

_____Less than one month

_____Two to four months

_____Five months to a year

_____13-24 months

_____More than 2 years

142. For which of the following types of documents do you personally use a word processing program or a computer dedicated to word processing? Check all that apply:

_____Memoranda

_____Letters

_____Short reports or compositions (up to 19 pages)

_____Long reports or compositions (20 or more pages)

_____Other ____

_____Not applicable

Which of the following outputs from a computer program have you produced or had produced for making decisions or solving problems?

		Produced	Have Not Produced	Don't Know
143.	Spreadsheets	○	○	○
144.	Charts and tables	○	○	○
145.	Graphs	○	○	○
146.	Drawings	○	○	○

147. _____I have not produced any of these outputs

148. To which of the following uses in the arts have you put a computer? Check all that apply:

_____In graphic art expression

_____In musical expression

_____For creative writing

_____For choreography

_____Other ________________________________

149. Computers are frequently used to access data bases. Which of the following types of data bases have you personally accessed? Check all that apply:

_____I have not accessed any data bases

_____Career information

_____Bibliographical citations (library)

_____Stock market

_____School or district data (personnel, budget, inventory, etc.)

_____Student records

_____National press wire services

_____Electronic bulletin board

_____Computer courseware or other educational resources

_____Recreational programs

_____Other ____

150. For which of the following subject areas have you used a computer for teaching and learning? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

151. For which of the following subject areas have you used a computer program for teaching and learning that you, yourself, wrote? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

152. In which of the following subject areas have you used a simulation program? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

153. For which of the following subject areas have you used a computerized information retrieval system (computer data base) as an aid for an activity such as preparing curriculum, writing a paper, preparing a science project? Check all that apply:

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

QUESTIONS ABOUT DEVELOPING COMPUTER PROGRAMS

154. Which of the following activities have you, yourself, performed with a computer? Check all that apply:

_____I have not done any of these activities

_____Loaded a program into memory

_____Saved a program on a disk, tape, or cards

_____Named or renamed a program file

_____Listed a program

_____Backed up a copy of a program or file

_____Deleted a program from disk or tape

_____Erased computer memory

_____Accessed a catalog or menu of saved programs

_____Run a program

_____Tested and debugged a program

155. In which of the following languages have you written a program? Check all that apply:

_____I have not written a program

_____APL

_____Assembly Language

_____BASIC

_____COBOL

_____FORTRAN

_____Logo

_____Pascal

_____Pilot

_____RPG

_____Other ____________________

156. What was the length, in lines, of the longest program you have written?

_____0, I have not written a program

_____1-10 lines or 1 procedure

_____11-25 lines or 2-3 procedures

_____26-50 lines or 4-10 procedures

_____51-100 lines or 11-20 procedures

_____101 or more lines or 21 or more procedures

157. What is the longest program--written by someone else--that you have personally modified, edited, or changed in some way so that it would perform a different task?

_____I have never changed a program

_____1-20 lines (approximately 1 screen)

_____21-40 lines (approximately 2 screens)

_____40 or more lines

158. Have you, yourself, written a computer program containing any of the following elements? Check all that apply:

_____I have not written a program

_____Repetition or iteration

_____Conditional decisions ("if, then")

_____Use of variables

_____Logical operations

_____Arithmetic operations

_____Sound output

_____Graphical output

_____Using arrays

_____Using data files

_____Statements for accepting input from keyboard or other peripheral device

_____Format statements or image strings for outputting information on video display, printer or other peripheral device

159. Which of the following sources of inaccuracies in a program output have you experienced? Check all that apply:

_____The input data was inaccurate ("Garbage in/ garbage out")

_____The program "rounded off" inappropriately

_____There was a logical error in the program

_____The input data was called from the wrong memory location (wrong field, wrong variable, etc.)

_____The program was inappropriate for the problem

_____Other, please specify ____________________________

_____None

160. In which of the following subject areas have you worked with a problem that required organizing a large amount of data?

______Art/Graphic Arts

______Business Education

______Computer Programming

______Computer Science

______English/Language Arts

______Foreign Languages

______Health

______Home Economics

______Industrial Arts

______Introduction to Computing

______Mathematics

______Music

______Performing Arts

______Physical Education

______Science

______Social Studies/Social Science

161. Which of the following aspects of algorithm development have you studied? Check all that apply:

_____I haven't studied any of these

_____Hand simulation of an algorithm

_____Ability to recognize basic algorithms (e.g., sorting, searching, making lists of things, repeating a task until a goal is reached, etc.)

_____Algorithm testing by "Worst Case" inputs

_____Design of a set of test data

_____Determine how many arithmetic computations it will take to complete the algorithm

_____Relative efficiency of different algorithms to solve the same problem

_____Not applicable

162. Which of the following aspects of algorithm design have you studied? Check all that apply:

______Flowcharts or other diagrams of algorithms

______English (or other) "pseudocode" for planning

______The concept of subtasks or procedures

______Top down design ("Consider the whole first, then details")

______Treatment of error conditions (e.g., bad input data)

163. Do you have a textbook that shows how to develop algorithms?

______Yes

______No

______Don't know

164. Do you look up algorithms in a text or reference book before making up your own?

______Yes

______No

______Don't know

165. Have you written at least one complete user's guide (of any kind) during your school career?

______Yes

______No

______Don't know

______Not applicable

166. Which of the following aspects of documentation and technical writing have you studied? Check all that apply:

_____Preparation of outlines before writing

_____Teacher approval of outlines before writing

_____Standard components of reference material (tutorial, component summaries, errors, glossary, index, etc.)

_____Use of word processing system to prepare drafts of a document

_____Peer review of documents

_____Rewriting and second review by teacher or peers

_____Not applicable

167. Which of the following practices for debugging and testing of programs have you studied? Check all that apply:

_____Testing of small pieces of a program before it is all put together and tried

_____Testing a program by putting in the largest, smallest, and most troublesome inputs

_____Using "debugging" PRINT or output commands in your programs to see where execution is proceeding and what values are in the variables

_____When a real mystery occurs, dividing the program in pieces with output commands, and successively narrowing the problem location until the error is found ("Divide and conquer")

_____Performance testing of programs: Measure the time or memory required to process various amounts of data

QUESTIONS ABOUT ANALYZING COMPUTER APPLICATIONS

Many schools use computers for recording and accessing data about students and staff. Please answer the following four questions if your school uses computers for this purpose. Check all that apply:

168. Who uses the computer:

______Principal

______Teachers

______Special computer personnel

______Guidance counselors

______Secretaries, Clerks

______Students

______Other ____

169. What types of information are maintained in the computer system about students? Check all that apply:

_____Classes requested

_____Classes enrolled

_____Grades received

_____Homeroom assignment

_____Standard test scores

_____Honors

_____School enrolled

_____Personal profile

_____Attendance

_____Class schedule

_____Residence

_____Age (Birth date)

_____Telephone number

_____Other ____

170. Before deciding to use a computer, people frequently consider factors that might argue against computer use. Which of the following have you considered? Check all that apply:

______Equipment acquisition costs

______Equipment-related costs

______Equipment availability (accessibility)

______Hardware maintenance

______Software maintenance

______Software acquisition costs

______Software-related costs

______Software availability/accessibility/quality

______Equipment capacity (memory)

______Equipment capacity (CPU)

______Textbook availability

______Data gathering costs

______Data storage costs

______Data entry costs

______Programming costs

______Output capabilities

______Other ____

QUESTIONS ABOUT UNDERSTANDING SOCIAL ISSUES RELATED TO COMPUTERS

171. Which of the following data quality assurance activities have you done? Check all that apply:

______Established categories of data to be collected

______Identified indicators or measures for data categories

______Obtained data

______Dealt with missing data

______Changed data into a machine-readable form

______Verified machine data against raw data

______Conducted range check

______Examined summary statistics, such as totals, means and standard deviations

______Other ____

In your school, how often have any of the following computer-related problems occurred in the past year?

		Frequency			
		Never	1-2 Times	3-5 Times	6+ Times
	Problem				
172.	Intentional equipment damage	○	○	○	○
173.	Equipment theft	○	○	○	○
174.	Intentional destruction of data	○	○	○	○
175.	Unauthorized change of data	○	○	○	○
176.	Theft of data	○	○	○	○
177.	Copying copyrighted programs	○	○	○	○
178.	Theft of passwords	○	○	○	○
179.	Intentional disruption of operating system	○	○	○	○
180.	Student cheating on computer projects	○	○	○	○

181. In the past year, have you been affected by a "computer error" in your school?

_____Yes

_____No

182. If yes, generally how quickly was the error fixed?

_____As soon as it was noticed (i.e., immediately)

_____Within one day

_____Within one week

_____In 1-2 weeks

_____In 3-4 weeks

_____It has not been fixed

183. If yes, how much did the error cost?

_____Don't know

_____Less than $50

_____$51 - $500

_____$501 - $5,000

_____$5,000+

184. In the past month, have you heard any adults complain about losing a job or having a job made part-time because of a new computer?

_____Yes

_____No

185. In the past month, have you heard any adults tell you that they are using a computer in their work?

______Yes

______No

186. Have you ever been required to interact with a computer when you would have preferred to interact with a person (for example, a bank machine teller instead of a human teller)?

_____Yes

_____No

187. Which of the following actions have you taken because you were concerned about the possibility of having your personal privacy invaded by a computer? Check all that apply:

_____Omitting certain information when filling out forms or applications

_____Requesting your name be removed from a list

_____Declining to provide your social security number

_____Complaining to government agencies

_____Writing to a legislator

_____Writing to the editor of a newspaper or magazine

_____Other ______________________________

_____I have not taken any such actions

188. Which of the following actions have you taken in your school to protect the privacy of entries on a computerized data base? Check all that apply:

_____Restricted or limited the data that was collected or entered into the data base

_____Identified individuals by identification number instead of names

_____Stored information necessary to link names with ID numbers in a separate location

_____Periodically purged data

_____Encoded all data

_____Restricted physical access to terminals

_____Assigned user "log on" ID to restrict access to data

_____Encrypted data when transferring from one location to another.

_____Restricted physical access to data cards, tapes, or disks

_____I have not taken any such actions

189. Do you (or any member of your family) have a computer at home?

_____Yes

_____No

190. If yes, about how many minutes per week do you use it?

_____Minutes

If yes, what proportion of the time that you spend using a computer at home is spent in the following ways?

	Computer Use	Proportion of Time				
191.	Working alone	0%	25%	50%	75%	100%
192.	Teaching someone	0%	25%	50%	75%	100%
193.	Working together with someone	0%	25%	50%	75%	100%

194. If yes, what proportion of the time that you spend using a computer at home is spent in recreational use (either alone or with others)?

_____0%

_____25%

_____50%

_____75%

_____100%

QUESTIONS ABOUT UNDERSTANDING COMPUTER-RELATED CONCEPTS AND TERMS

195. Which of the following operating systems have you personally used?

_____CP/M

_____Apple DOS3.3

_____TRSDOS

_____MS-DOS or PC-DOS

_____Unix

_____UCSD-p-system

_____Zenix

_____VMS

_____TSO

_____Other ____

_____Don't know

_____I have not used any operating system

Which of the following data communication equipment or data terminal equipment have you used?

		Used	Not Used	Don't Know
196.	Modem	○	○	○
197.	Serial (RS232) or Parallel Interface	○	○	○
198.	Port	○	○	○
199.	Protocol Emulator or Converter	○	○	○

200. Have you studied any specific details about how computers' speeds compare to non-computer methods for the same jobs?

_____Yes

_____No

_____Don't know

201. Do you know approximately how long (a minute? an hour? a week?) it would take a personal computer (such as an Apple II) or a large business-type computer (such as an IBM 370) to sort a thousand names alphabetically?

_____Yes

_____No

_____Don't know

202. Have you studied what things computer speed depends upon besides the choice of physical computing hardware (e.g., choice of sorting algorithm, language in which the algorithm is expressed, etc.)?

_____Yes

_____No

_____Don't know

203. Have you discussed the relationship among the internal memory, central processing unit, input-output devices, mass storage devices, and described the flow of information and control?

_____Yes

_____No

_____Don't know

204. Which of the following terms can you define; that is, produce a sentence or paragraph explaining the term in relation to other given terms? Check all that apply:

______Algorithm

______Artificial intelligence

______Assembler

______Batch processing

______Central processing unit

______Compiler

______Computer-aided design

______Computer-aided manufacturing

______Computer operator

______Computer programmer

______CRT terminal

______Data base

______Data entry clerk

______Data processing

______Disk drive

______Higher level language

______Information retrieval

______Internal memory

______Interpreter

______Machine language

______Merging files

______Modeling and simulation

______Modem

______Operation system

______Pattern recognition

______RAM

______ROM

______Searching files

______Sorting files

______Systems analyst

______Tape drive

______Time sharing

______Updating files